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OFFICIAL GAZETTE

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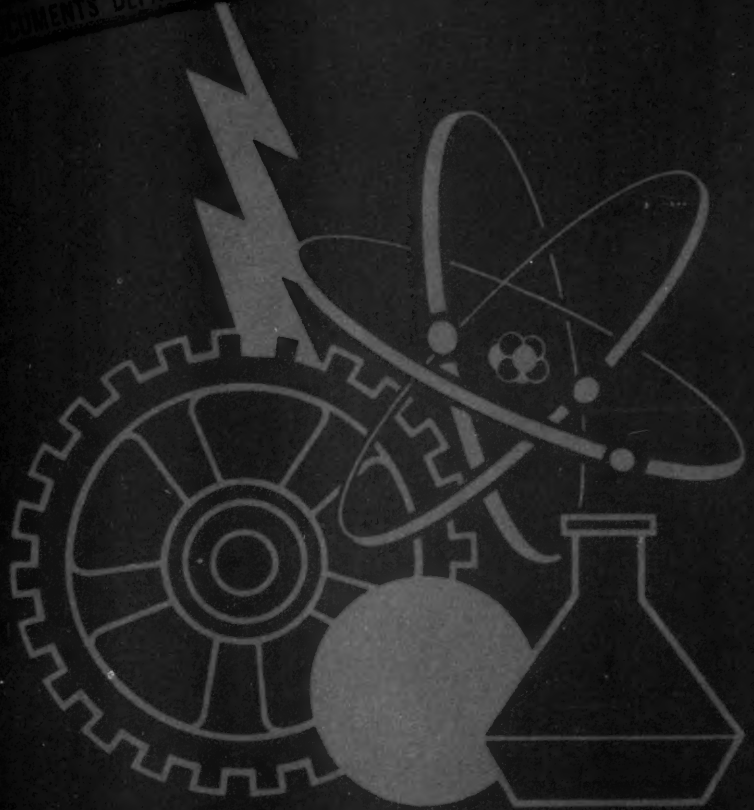

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

November 28, 1978 Volume 976 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Board of Appeals Decisions Rendered in the Month of October 1978

Affirmed	195
Affirmed in Part	26
Reversed	81
Total	302

Set VIII of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders issued between July 1, 1978 and September 30, 1978. All of these addenda have been consolidated into Set VIII of "Addenda to the Classification Definitions."

Class	*Class*	*Class*	*Class*
4	109	210	302
8	110	217	308
13	116	219	310
15	118	220	312
21	122	221	313
23	123	222	325
29	126	224	328
34	134	226	336
35	137	229	337
40	138	234	340
49	149	235	343
52	156	236	346
60	159	241	350
62	160	242	360
72	162	248	364
73	165	249	400
83	176	252	418
89	178	260	423
90	180	264	425
92	193	266	427
99	197	271	428
100	199	280	431
101	200	281	432
102	201	282	544
105	202	285	530-570 Classes: (568)
106	206	293	
108	208	296	

The following newly established classes issued between July and September, 1978: Classes 405 and 562.

ALFRED C. MARMOR,
Administrator for Documentation,
October 26, 1978.

July-September 1978 Classification Orders

The reclassifications covered by the following classification changes became effective between July and September 1978.

	Class	*Subclasses*
Classification Order 636, effective July 7, 1978:		
Abolished	340	213; 213.1; 213.2; 226; 408; 409; 214; 410-415; 215-221; 416; 224; 222; 417-419; 225; 420; 223; 227; 227.1; 229-232; 228; 228.1; 228.2; 233-256; 258-283; 285; 421.
Established	340	500-693.
Classification Order 637, effective August 3, 1978:		
Abolished	260	2; 46; 46.5; 47; 48-51; 51.5; 52-67; 67.5-67.8; 68-72; 72.5; 73; 75-77; 77.5,78; 78.3; 78.41; 79; 79.1; 79.3; 79.5; 79.7.
	526	11.1; 11.2
Established	260	2.01.
	526	28; 31-40; 243; 244; 256; 257; 262; 269; 286-289; 301; 302; 313-316. Cross-reference art collection. 917.
	528	1-425. Cross-reference art collection. 901-906.
Position changes	526	59-72.
Title changes	526	90.
Classification Order 638, effective August 3, 1978:		
Abolished	260	2.1; 2.2.
Established	521	25-39.
Classification Order 639, effective August 3, 1978:		
Abolished	*260	2.5.
Established	521	50-189. Cross-reference art collection. 901-921.
*Schedule change	260	
Classification Order 640, effective August 8, 1978:		
Abolished	52	492-502; 613-629.
Established	52	761-830.
Classification Order 641, effective August 21, 1978:		
Abolished	114	16; 17; 16.4-16.8.
Established	114	312-342.
Classification Order 642, effective August 29, 1978:		
Abolished	166	.5; .6.
Established	166	335-368.
Classification Order 643, effective September 7, 1978:		
Abolished	260	514-542.
Established	(New) 562	400-609.
Classification Order 644, effective September 18, 1978:		
Abolished	209	71-126.
Established	209	3.1-3.3; 44.1-44.3; 509-707. Cross-reference art collection. 900-942.
Title change	209	3.
Classification Order 645, effective September 29, 1978:		
Abolished	61	All.
Established	(New) 405	1-303.
Classification Order 646, effective September 29, 1978:		
Abolished	53	1-19; 21-47; 59-63; 78; 112 123-126; 159-166; 177-200.
Established	53	394-594.
Title changes	53	52; 111 R.

ALFRED C. MARMOR,
Administrator for Documentation,
October 26, 1978.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,025,577, J. C. Jureit, STRUCTURAL ELEMENT, filed June 30, 1978, D.C., N.D. Ohio (Toledo), Doc. C78-281, *Automated Building Components, Inc.* v. *Ohio Truss Mart, Inc.*

3,055,128, F. B. Edwards, POINTS FOR DIGGING BUCKETS, filed May 19, 1978, D.C., N.D. Ga. (Atlanta), Doc. C78-898A, *Edwards Tiger Tooth Manufacturing Company, Inc.* v. *Hensley Equipment Company, Inc.*

3,265,494, Baldwin and Cape, ALLOYS FOR HIGH TEMPERATURE USE CONTAINING CHROMIUM, TUNGSTEN, NICKEL, COBALT, filed Feb. 14, 1978, D.C.N.J. (Newark), Doc. C-78-276, *Coast Metals, Inc.* v. *Arthur Tregoning Cape and James French Baldwin.*

3,292,117, Bryant and Johnston, COAXIAL CONNECTOR WITH MEANS FOR PREVENTING AXIAL AND ROTATIONAL MOVEMENT BETWEEN CONNECTOR COMPONENTS, filed June 26, 1978, D.C.N.H. (Concord), Doc. 78-203, *Bunker Ramo Corporation* v. *Omni Spectra, Inc.*

3,825,823, D. J. Boon, MANUFACTURE OF FOAM MATERIAL, **filed** June 26, 1978, D.C., N.D. Ind. (South Bend), Doc. S78–0126, *Unifoam, A.G.* v. *Indiana Foam Fabricators, Inc.*

3,464,808, T. C. Kearns, MANUFACTURE OF AMMONIUM POLYPHOSPHATE FROM WET PROCESS PHOSPORIC ACID, **filed** Apr. 21, 1978, D.C. Kans. (Topeka), Doc. 78–4153, *Swift Agricultural Chemicals Corporation* v. *Farmland Industries, Inc. and Farmers Chemical Co.*

3,496,974, Munsil and Silvey, METHOD FOR CONSTRUCTING CARPENTRY FRAMES, **filed** June 26, 1978, D.C., N.D. Calif. (San Francisco), Doc. C–78–1398–AJZ, *Ritter Manufacturing, Inc.* v. *Evans Rotork, Inc.*

3,588,917, A. J. Antonious, GOLF GLOVE, **filed** May 17, 1978, D.C. Md. (Baltimore), Doc. HM78–877, *Anthony J. Antonious* v. *Kamata-Ri Company Limited.*

3,610,799, G. A. Watson, MULTIPLEXING SYSTEM FOR SELECTION OF NOTES AND VOICES IN AN ELECTRONIC MUSICAL INSTRUMENT, **filed** May 23, 1978, D.C., S.D. Ind. (Evansville), Doc. EV78–73–C, *Kimball International, Inc.* v. *Allen Organ Company.*

3,616,040, A. S. Toback, PROCESS FOR BONDING WITH ACRYLATE POLYMERIZED BY A PEROXY AND A CONDENSATION PRODUCT OF ALDEHYDE AND A PRIMARY OR SECONDARY AMINE, **filed** Aug. 16, 1977, D.C., W.D. Pa. (Erie), Doc. 77–117, *Loctite Corporation* v. *Hughson Chemical Company.*

3,624,536, D. E. Norton, HIGH-DYNAMIC-RANGE AMPLIFIER, **filed** Sept. 15, 1977, D.C., M.D. Fla. (Orlando), Doc. 77–395–Orl–C–R, *Adams-Russell Co. Inc.* v. *Q-Bit Corporation.* Defendant is hereby enjoined from making, using or selling without the consent of plaintiff, May 22, 1978.

3,649,962, Bedard and Spall, Jr. VEHICLE ALARM SYSTEM, **filed** Dec. 2, 1976, D.C.N.J. (Newark), Doc. C–76–2310, *Peter R. Bedard et al.* v. *General Motors Corporation et al.* Action dismissed on May 19, 1978.

3,802,539, K. G. Thiele, DISC BRAKE APPARATUS, **filed** June 1, 1976, D.C., M.D. Fla. (Orlando), Doc. 76–202–Orl–C–R, *Mechanics Incorporated* v. *Stamco Incorporated, Alfred R. Kilbey, Karl G. Thiele.*

3,824,365, W. R. Tapper, MICROWAVE OVEN CONTROL SYSTEM, **filed** Apr. 13, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c1244, *Litton System Inc.* v. *Amana Refrigeration, Inc.*

3,832,952, H. Hurni, DEVICE FOR THE VERTICAL AND LATERAL DISPLACEMENT OF RAILWAY TRACK; **Re. 29,437**, same, **filed** May 2, 1977, D.C., E.D. Va. (Norfolk), Doc. C/A77–294–N, *Canron, Inc.* v. *Plasser American Corporation.*

3,834,668, J. W. Casey, PIPE PUSHING APPARATUS, **filed** July 7, 1978, D.C., W.D. Mich. (Grand Rapids), Doc. G78–0494–CA1, *John W. Casey* v. *Van Ess Company.*

3,848,786, J. S. Baxter, PIPE SUPPORTING RACK FOR VEHICLE, **filed** June 30, 1978, D.C., E.D. Mich. (Detroit), Doc. 78–71618, *James S. Baxter* v. *Ebinger Manufacturing Co. Inc.*

3,867,216. (See 3,795,557.)

3,876,079, Elkins and Hanz, MOUNTING RACK FOR RIFLES, **filed** Mar. 17, 1978, D.C., S.D. Tex. (Houston), Doc. CA–78–H–512, *Johnny C. Elkins et al.* v. *"G"ee Manufacturing Company, Inc.*

3,884,330, J. S. Chalabian, COIN OPERATED VENDING APPARATUS WITH DOOR OPERATED COIN RETURN AND PAWLS THEREFOR, **filed** Feb. 20, 1976, D.C., C.D. Calif. (Los Angeles), Doc. 76–574–DWW, *K-Jack Engineering Co., Inc.* v. *Pete's Newsrack, Inc.*

3,844,461. Robison and Gerber, PRECISE INDEXING APPARATUS AND METHOD, **filed** Jan. 10, 1978, D.C., N.D. Tex. (Dallas), Doc. CA3–78–0045–G, *The Gerber Scientific Instrument Company* v. *Camsco Inc.*

3,885,932, Moore and Flynn, DUST FILTRATION SYSTEM; **3,973,935**, same, **filed** May 16, 1978, D.C., N.D. Ill. (Chicago), Doc 78c1929. *The Meyers-Sherman Company* v. *Super Products Corporation*, **Same, filed** May 10, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78–285, *Super Products Corporation* v. *Meyers-Sherman Company.*

3,918,646, Leal-Diaz and Rangel-Garza, IRRIGATION SYSTEMS BY TRICKLING, **filed** Nov. 12, 1976, D.C., C.D. Calif. (Los Angeles), Doc. CV76–3541–RMT, *Jaime Leal-Diaz et al.* v. *Ag-Drip Sales Inc. et al.* Filed judgment and order thereon that this suit is invalid and thus not infringed on by defendant, May 15, 1978.

3,924,750, R. S. Dunchock, EYEGLASS DISPLAY UNIT, **filed** June 30, 1978, D.C., E.D. Pa. (Philadelphia), Doc. 78–2234, *Optarac Corporation* v. *Arnold J. Forman et al.*

3,931,476, G. H. Matthews, METHOD AND SYSTEM FOR AUTOMATICALLY CONTROLLING THE CONNECTION OF INTER-CITY TELEPHONE CALLS AT A USERS FACILITY; **3,934,095**, Matthews and Epstein, METHOD AND SYSTEM FOR SHORT TERM QUEUING OF TELEPHONE CALLS IN AUTOMATIC INTER-CITY TELEPHONE CALL CONNECTION SYSTEM, **filed** July 22, 1977, D.C., N.D. Tex. (Dallas), Doc. CA3–77–0991–D, *Action Communication Systems, Inc.* v. *The Southland Corporation.*

3,933,229, J. Y. Pelavin, MULTI-FUNCTIONAL FOLDABLE SUITCASE, **filed** June 19, 1978, D.C., S.D.N.Y., Doc. 78–C–2796, *Lark Luggage Corporation* v. *Madler Park Ave. Inc. et al.*

3,933,543, D. A. Madden, PROPELLANT COMPOSITIONS CONTAINING A STAPLE METAL FUEL, **filed** Nov. 8, 1977, United States Court of Claims, Doc. 543–77, *Atlantic Research Corporation* v. *The United States.*

3,934,095. (See 3,931,476.)

3,938,496, Kampf and Law, FIREPLACE FORCED AIR CIRCULATION MEANS, **filed** July 19, 1978, D.C. Minn. (Minneapolis), Doc. 4–78–C–293, *Aquappliances, Inc.* v. *Cheep Heat, Inc.*

3,942,338, Furletter and Stadler, TORQUE LIMITING COUPLING, **filed** July 14, 1978, D.C., E.D. Mich. (Flint), Doc. 78–40080, *Excel Corporation* v. *Fen-Tec, Inc.*

3,945,497, P. Greenberg, STORAGE APPLIANCE, **filed** May 24, 1977, D.C. Minn. (Minneapolis), Doc. 4–77–C–185, *Percy Greenberg, Norman Goldetsky, and Copper Sales, Inc.* v. *Pipeline Supply, Inc., Robert Singer, Gary Singer and Bruce Hanson.*

3,948,441, Perkins, Goodhouse and Nurnberg, TIME VARIABLE THERMOSTAT, **filed** July 3, 1978, D.C. Minn. (Minneapolis), Doc. 4–78–264, *Robertshaw Controls Company* v. *Honeywell Inc.*

3,958,347, L. M. Heitman, a DRAIN DITCH DIGGING ATTACHMENT FOR A BACK-HOE, **filed** July 25, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78–2876, *Leroy Marvin Heitman* v. *John Dottl.*

3,959,624, W. Kaslow, CODED MERCHANDISING COUPON, **filed** May 22, 1978, D.C., S.D.N.Y., Doc. 78–C–2373 WCC, *Uniform Product Code Council Inc.* v. *Walter Kaslow.*

3,964,373, Christen, Jr. and Latal, PAPER LOG ROLLER, filed Jan. 23, 1978, D.C., E.D. Pa. (Philadelphia), Doc. 78–234, *Christen Incorporated* v. *Hardesty-Quittner, Inc.*

3,966,396, Howes and Holland, TEXTILE PRINTING PROCESS AND TRANSFER MEDIUM, **filed** June 13, 1978, D.C., E.D. Pa. (Philadelphia), Doc. 78–1981, *Bruce Howes* v. *Penn Lithographing Company.*

3,973,935. (See 3,885,932.)

3,983,692, A. Perl, LINK CHAIN, **filed** July 19, 1978, D.C. Mass. (Boston), Doc. 78–1805–T, *Brique* v. *Intricate Machine & Engineering Inc. and Sulo Aijala.*

3,987,895, K. Jamshidi, DISPOSABLE LIVER BIOPSY TRAY, **filed** Dec. 2, 1977, D.C. Minn. (Minneapolis), Doc. 4–77–C–437, *Dr. Khoshrow Jamshidi and Kormed, Inc.* v. *Johannah Medical Services, Inc.*

4,012,494, C. Ling, DIRECT RADIOIMMUNOASSAY FOR ANTIGENS AND THEIR ANTIBODIES, **filed** Mar. 20, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1037, *Abbottt Laboratories* v. *American Hospital.*

4,021,055, M. C. Okland, VEHICLE RUNNING BOARD, **filed** Oct. 31, 1977, D.C. Minn. (St. Paul), Doc. C2–77–476, *Tafco Equipment Co.* v. *Putco Incorporated.*

4,022,065, Ramin and Stearns, CALIBRATED SAMPLE DELIVERY APPARATUS ACCOMMODATING OFFSET ERROR, **filed** May 23, 1977, D.C., W.D. Tex. (Austin), Doc. A–77–CA–91, *Stanley D. Stearns and James A. Ramin* v. *Tracor, Inc. and SGE, Inc.*

4,040,702, McKee and Witte, SOLDERLESS TERMINATION SYSTEM, **filed** Oct. 21, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3905, *Bunker Ramo Corporation* v. *TRW, Inc.*

4,046,923, Meng and Driessen, PACKAGE WITH STAGGERED PRODUCT SLICES AND PROCESS FOR PRODUCING THE SAME, **filed** Sept. 8, 1977, D.C. Minn. (Minneapolis), Doc. 4-77-C-322, *Land O'Lakes, Inc.* v. *L. D. Schreiber Cheese Co., Inc.* **Same, filed** Dec. 12, 1977, D.C. Minn. (Minneapolis), Doc. 4-77-C-453, *Clearfield Cheese Co., Inc. and Palmer Manufacturing Corp.* v. *L. D. Schreiber Cheese Co., Inc.* **Same, filed** Aug. 9, 1977, D. C. Minn. (Minneapolis), Doc. 4-77-C-283, *Land O'Lakes, Inc.* v. *L. D. Schreiber Cheese Co., Inc.* **Same, filed** Sept. 6, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3287, *L. D. Schreiber Cheese Co., Inc.* v. *Borden, Inc.* **Same, filed** Oct. 18, 1977, D.C. Minn. (Minneapolis), Doc. 4-77-C-365, *Borden, Inc.* v. *L. D. Schreiber Cheese Company, Inc.*

4,050,893, Hancock and Sattler, ARRANGEMENT FOR PREPARING NATURAL TISSUE FOR IMPLANTATION, **filed** Sept. 27, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3606, *Hancock Laboratories, Inc.* v. *American Hospital Supply Corporation.*

4,052,775, Gavagan and Peterson, SAFETY SEAT BELT BUCKLE, **filed** Nov. 18, 1977, D.C. Del. (Wilmington), Doc. C.A. 77-453, *Irvin Industries, Inc.* v. *Gateway Industries, Inc.*

4,066,329, G. A. Van Exel, OPTICAL ADJUSTMENT KNOB WITH SPACED APART PLATFORMS, **filed** Jan. 6, 1978, D.C. Kans. (Kansas City), Doc. 78-2004, *Bausch & Lomb Incorporated* v. *Jason/Empire Inc.*

Re. 28,617, C. H. McShan, STEREO MULTIPLEX DECODING SYSTEM WITH A PHASE LOCKED LOOP SWITCHING SIGNAL CONTROL, **filed** July 11, 1978, D.C., N.D. Tex. (Fort Worth), Doc. CA4-78-226, *Hunter McShan* v. *Motorola, Inc.*

Re. 29,437. (See 3,832,952.)

D. 220,911. C. McGrady, TRANSPARENT BOOK STAND, **filed** July 18, 1978, D.C., S.D.N.Y. Doc. 78-C-3231, *Corinne McGrady* v. *Federated Department Stores Inc.*

D. 231,745, R. Brass, GAME WHEEL, **filed** June 27, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C-258, *Pressman Toy Corporation* v. *Duane Rutherford and Prestige Marketing, Inc.*

D. 238,268, C. Strada, MOTORCYCLE EXHAUST PIPE, **filed** Mar. 3, 1977, D.C., E.D. Wis. (Milwaukee), Doc. 77-C-135, *Harley-Davidson Motor Co., Inc.* v. *Charles Strada.*

D. 243,217, E. E. Warsaw, SOFA, **filed** June 29, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-2510-WPG, *Sheffield Furniture Corporation* v. *California Convertible Sofas, Inc.* **Same, filed** Feb. 1, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-0242WAI, *Sheffield Furniture Corp.* v. *California Styles Manufacturing Co.* **Same, filed** Jan. 18, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-248-DWW, *Sheffield Furniture Corporation* v. *Hillcrest Furniture Mfg. Co., Inc.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,605,712, Re. S.N. 946,435, Filed Sep. 27, 1978, Cl. 123/146.5 A, IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES, Eric H. Ford, Owner of Record: *Autocar Electrical Equipment Company Limited, London, England,* Attorney or Agent: Gerrit D. Foster, et al., Ex. Gp.: 342

3,715,334, Re. S.N. 928,843, Filed Jul. 27, 1978, Cl. 260/46.5 UA, PLATINUM-VINYLSILOXANES, Bruce D. Karstedt, Owner of Record: *General Electric Company, Waterford, N.Y.,* Attorney or Agent: Donald J. Voss, et al., Ex. Gp.: 143

3,758,643, Re. S.N. 941,601, Filed Sep. 11, 1978, Cl. 260/897 A, THERMOPLASTIC BLEND OF PARTIALLY CURED MONOOLEFIN COPOLYMER RUBBER AND POLYOLEFIN PLASTIC, William K. Fischer, Owner of Record: *Uniroyal, Inc., New York, N.Y.,* Attorney or Agent: James J. Long, et al., Ex. Gp.: 142

3,875,316, Re. S.N. 934,470, Filed Aug. 17, 1978, Cl. 426/600, ISOMERIZED HOP EXTRACTS, Anthony Martin Humphrey, Owner of Record: *Bush Boake Allen Limited, Walthamstow, England,* Attorney or Agent: Herbert H. Goodman, Ex. Gp.: 172

3,941,898, Re. S.N. 946,310, Filed Sep. 27, 1978, Cl. 427/18, DEVELOPING METHOD UTILIZING PULVERIZED, COLORED, CROSS-LINKED, VINYLIC POLYMER RESIN AS TONER, Shigeru Sadamatsu, et al., Owner of Record: *Inventor,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 162

3,947,185, Re. S.N. 946,005, Filed Sep. 27, 1978, Cl. 350/160 LC, FIELD EFFECT LIQUID CRYSTAL DISPLAY DEVICE, Shuji Maezawa, Owner of Record: *Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan,* Attorney or Agent: Harold I. Kaplan, et al., Ex. Gp.: 257

3,972,495, Re. S.N. 930,000, Filed Aug. 1, 1978, Cl. 244/145, AERIAL SLED, Domina C. Jalbert, Owner of Record: *Inventor,* Attorney or Agent: David S. Fishman, et al., Ex. Gp.: 315

3,976,073, Re. S.N. 936,156, Filed Aug. 23, 1978, Cl. 128/272, VIAL AND SYRINGE CONNECTOR ASSEMBLY, John L. Quick, et al., Owner of Record: *Baxter Laboratories, Inc., Morton Grove, Ill.,* Attorney or Agent: John P. Kirby, Jr., et al., Ex. Gp.: 335

3,987,610, Re. S.N. 934,009, Filed Aug. 16, 1978, Cl. 57/34 R, METHOD AND APPARATUS FOR START-SPINNING A THREAD ON AN OPEN-END SPINNING UNIT OF AN OPEN-END SPINNING MACHINE, Fritz Stahlecker, et al., Owner of Record: *Inventors,* Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 244

4,004,166, Re. S.N. 936,031, Filed Aug. 23, 1978, Cl. 310/312, METHOD FOR STABILIZING THE VIBRATION FREQUENCY OF A TUNING FORK-TYPE QUARTZ CRYSTAL OSCILLATOR, Hozumi Nakata, Owner of Record: *Nihon Dempa Kogyo Co., Ltd., Tokyo, Japan,* Attorney or Agent: Robert D. Flynn, et al., Ex. Gp.: 212

4,015,711, Re. S.N. 944,885, Filed Sep. 22, 1978, Cl. 206/43, END PLUG FOR ROLLED MATERIALS, Henry L. Mason, Owner of Record: *Precision Plastic Industries Inc., Bridgeport, Conn.,* Attorney or Agent: John T. Kelton, et al., Ex. Gp.: 241

4,019,591, Re. S.N. 939,908, Filed Sep. 5, 1978, Cl. 175/107, WELL DRILLING TOOL, Fred K. Fox, Owner of Record: *Engineering Enterprises Inc., Houston, Tex.,* Attorney or Agent: W. F. Hyer, et al., Ex. Gp.: 354

4,026,678, Re. S.N. 943,466, Filed Sep. 18, 1978, Cl. 44/1 D, PROCESS FOR TREATING MUNICIPAL WASTES TO PRODUCE A FUEL, Andrew D. Livingston, Owner of Record: *Guaranty Performance Co. Inc., Independence, Kans.,* Attorney or Agent: Gordon D. Schmidt, et al., Ex. Gp.: 116

4,033,287, Re. S.N. 946,843, Filed Sep. 28, 1978, Cl. 118/49.1, RADIAL FLOW REACTOR INCLUDING GLOW

DISCHARGE LIMITING SHIELD, Frank Bernard Alexander, Jr., et al., Owner of Record: *Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.*, Attorney or Agent: W. L. Keefauver, et al., Ex. Gp.: 166

4,085,115, Re. S.N. 940,506, Filed Sep. 7, 1978, Cl. 260/308, CARBOXAMIDE TETRAZOLES, Joachim Augstein, et al., Owner of Record: *Fisons Limited, London, England*, Attorney or Agent: John E. Lind, et al., Ex. Gp.: 122

PATENT NOTICES

Certificates of Correction for the Week of Nov. 28, 1978

Re. 29,337	4,078,985	4,087,555	4,095,526
Re. 29,584	4,079,054	4,088,758	4,095,879
Re. 29,631	4,079,231	4,089,044	4,095,932
3,366,733	4,079,627	4,089,149	4,096,190
3,877,214	4,080,484	4,089,739	4,096,297
4,000,261	4,080,527	4,089,975	4,096,481
4,026,522	4,080,688	4,090,877	4,096,570
4,028,196	4,082,267	4,091,127	4,096,659
4,028,298	4,082,831	4,091,293	4,096,814
4,031,210	4,083,063	4,091,345	4,097,020
4,050,091	4,083,727	4,091,921	4,099,502
4,052,656	4,083,825	4,092,130	4,113,835
4,062,947	4,084,137	4,092,579	4,113,946
4,069,563	4,084,967	4,092,968	4,114,069
4,071,281	4,085,263	4,093,012	4,114,435
4,072,622	4,085,265	4,094,206	4,114,743
4,073,961	4,086,045	4,094,586	4,115,060
4,075,321	4,086,072	4,094,794	4,115,605
4,077,086	4,086,209	4,094,980	4,115,855
4,078,247	4,087,193	4,095,139	4,119,652

Disclaimers

3,576,540.—*Donald G. Fair,* Belvidere, *Harold L. Baeverstad,* Rockford, and *Carl F. Erikson,* Belvidere, Ill. PLURAL MACHINE TOOL AND PART HANDLING CONTROL SYSTEM. Patent dated Apr. 27, 1971. Disclaimer filed Oct. 10, 1978, by the assignee, *White-Sundstrand Machine Tool, Inc.*

Hereby enters this disclaimer to claims 2, 6, 7, 11, 12, 15, and 16 of said patent.

3,696,868.—*Donald F. Taylor, Jr.,* Dallas Tex. WELL FLOW CONTROL VALVES AND WELL SYSTEMS UTILIZING THE SAME. Patent dated Oct. 10, 1972. Disclaimer filed June 1, 1978, by the assignee, *Otis Engineering Corporation.*

Hereby enters this disclaimer to claim 18 of said patent.

3,784,857.—*Todd J. Christopher,* Indianapolis, Ind. TELEVISION DEFLECTION CIRCUIT WITH LOW POWER REQUIREMENT. Patent dated Jan. 8, 1974. Disclaimer filed Oct. 5, 1978, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to all the claims of said patent.

3,881,626.—*Ralph A. Bartell,* Convent Station, N.J. CONTAINER CLOSURE FOR LYOPHILIZED PRODUCTS. Patent dated May 6, 1975. Disclaimer filed Oct. 4, 1978, by the assignee. *Warner-Lambert Company.*

The term of this patent subsequent to Sept. 10, 1991 has been disclaimed.

4,061,252.—*Pasquale R. Riccio,* Salem, N.H. AEROSOL DISPENSER USING BUTANE PROPELLANT. Patent dated Dec. 6, 1977. Disclaimer filed Sept. 27, 1978, by the assignee, *Ciba-Geigy Corporation.*

Hereby enters this disclaimer to claims 1 and 6 of said patent.

4,096,096.—*Yasuo Nishikawa, Akira Watanabe, Tetsuya Sugimoto,* and *Yasutoshi Mizuta,* Okayama, and *Yoshio Hatayama,* Kashihara, Japan. METHOD FOR MANUFACTURE OF CATALYST USED FOR REDUCTION OF NITROGEN OXIDES. Patent dated June 20, 1978. Disclaimer filed June 30, 1978, by the assignee, *Kyushu Refractories Co., Ltd.*

The term of this patent subsequent to June 6, 1995 has been disclaimed.

4,096,206.—*Nicodemus E. Boyer,* Parkersburg, W. Va. FLAME-RETARDANT TRIAZINES. Patent dated June 20, 1978. Disclaimer filed Oct. 10, 1978, by the assignee, *Borg-Warner Corporation.*

Hereby enters this disclaimer to claim 4 of said patent.

4,114,689.—*Newton Bradford Dismukes,* Carrollton, Tex. RECOVERY OF PETROLEUM. Patent dated Sept. 19, 1978. Disclaimer filed Oct. 2, 1978, by the inventor.

Hereby enters this disclaimer to claims 1–11, inclusive, of said patent.

Patents Available for Licensing or Sale

4,052,823. TAP TRANSPORT DEVICE. Ferg S. L., Vich, Spain. Correspondence to: Michael J. Striker, 360 Lexington Ave., New York, N.Y. 10017.

4,088,251. TENNIS BALL CARRIER. Ernesto Rodriguez, 304 Eden Drive, Longview, Tex. 75601.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to the Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,486,523. MOVABLE DRAIN CONNECTION FOR HUMIDIFIER SUMP.

3,831,670. A-COIL WITH IMPROVED AIR DEFLECTOR.

3,971,407. MEANS FOR LOCATING SUCTION VALVE.

3,971,500. METHOD OF METALLURGICALLY JOINING TUBING TO A WALL SEGMENT.

3,973,939. AIR CONDITIONING SYSTEM FOR MOBILE HOME.

3,978,693. BELT DRIVE MECHANISM FOR AUTOMATIC CLOTHES WASHING MACHINE.

4,086,707. CLOTHES DRYER MACHINE AND METHOD.

4,086,813. MICROWAVE OVEN FOOD TEMPERATURE SENSING PROBE ASSEMBLY INCLUDING A REFLECTOR.

4,091,546. LAUNDRY MACHINE AIR VENT.

4,091,644. TURBINE PUMP.

4,092,031. TRACKED SUPPORT FOR A CABINET.

4,093,327. HAND GRIP ASSEMBLY FOR MOVABLE CABINET.

4,093,841. LOW-TEMPERATURE SLOW-COOKING MICROWAVE OVEN.

4,096,872. HEAT SHIELDING STRUCTURE FOR DISHWASHERS.

4,098,481. TRACK ASSEMBLY.

4,114,013. CHOKE FOR COMBINED MICROWAVE AND SELF-CLEANING OVEN.

4,114,523. OSCILLATORY DRIVE MEANS FOR A ROTISSERIE SPIT.

4,095,321. APPARATUS FOR MANUFACTURING A HELICALLY FINNED HEAT EXCHANGER.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm ir reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 7, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-3-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-23-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-6-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-19-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-3-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-3-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	12-19-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-28-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission: Fluid Handling and Control; Lubrication.	10-31-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during October 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,002,192 to 3,007,168, inclusive
Plant Patents..... Numbers 2,095 to 2,100, inclusive

REISSUES

NOVEMBER 28, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,846

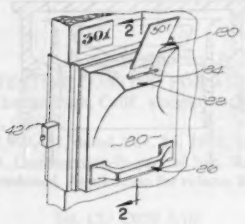
ELECTRONIC COMBINATION LOCK AND SYSTEM

Leonard J. Genest, Huntington Beach; Frederick E. Feagin, Tustin; Sylvan Cole, Los Angeles, and Daryle Messner, Buena Park, all of Calif., assignors to Monitron Industries, Inc., Santa Ana, Calif.

Original No. 3,926,021, dated Dec. 16, 1975, Ser. No. 430,247, Jan. 2, 1974. Application for reissue Dec. 14, 1977, Ser. No. 860,424

Int. Cl.[2] E05B *49/02*

U.S. Cl. 70—278 **12 Claims**



3. An independently operable electronic lock and system having an alterable combination, said lock being operable in response to a correct combination, comprising:

a lock housing adapted to be secured to a door;

securing means connected to said housing;

alterable memory means within said housing storing combination information for operating said lock;

means within said housing for receiving and detecting a first received combination, comparing said first received combination with said stored combination information, and generating an activation signal when a comparison is favorable;

said receiving and detecting means comprising a plurality of sensor coils connected to receive the output of an oscillator, each coil having a ferrous metal core and being connected to produce a first signal across said coil in the absence of a received combination area and a second signal across said coil in the presence of a received combination area and

a tuned circuit connected to produce a first output in response to the first signal across the respective coil and a second output in response to the second signal across the respective coil;

said received combination comprising being represented in a form at least one magnetically reactive received combination area positioned adjacent to and within the magnetic field of at least one of said sensor coils to cause said second signal to be produced across said at least one coil, said first and second output signals providing a second combination corresponding to said first combination;

means within said housing adapted to operate said securing means in response to said activation signal;

means within said housing for changing said stored combination information to said received combination when a comparison is favorable; and,

an energy source connected to supply the power requirements of said lock and system.

Re. 29,847

PACKING MACHINES

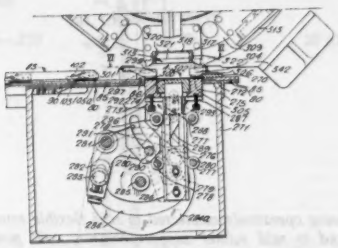
Robert W. Davies; Leonard Thornton; Maxwell F. Veness, and Leonard H. Calver, all of London, England, assignors to Molins Limited, London, England

Original No. 4,036,117, dated Jul. 19, 1977, Ser. No. 703,383, Jul. 7, 1976. Division of Ser. No. 443,938, Feb. 19, 1974, Pat. No. 3,977,157. Application for reissue Nov. 22, 1977, Ser. No. 853,959

Claims priority, application United Kingdom, Feb. 16, 1973, 7858/73

Int. Cl.[2] B31B *1/46*

U.S. Cl. 93—51 R **7 Claims**



1. Apparatus for folding a packet blank, comprising a cyclically-movable support for conveying blanks one at a time past stationary folder members so that successive edge portions of the blank protruding from the support are folded by engagement with successive ones of the stationary members, in which said support comprises a platform having at least two relatively-movable portions, drive means being provided for moving each of said portions in timed relation to the movement of the other portion or portions so that initially both or all portions of the support are aligned to receive a flat blank and move said blank past a first stationary folder member disposed to engage and fold an edge portion of the blank projecting from one portion of the platform, whereafter said one portion of the platform stops while motion of at least one other portion of the platform continues past another stationary folder member disposed to engage and fold another edge portion of the blank projecting from said other portion of the platform.

Re. 29,848

DETACHER MECHANISM FOR MILKING UNIT

Gary W. Schluckbier, Madison, and Donald W. Luick, Abbotsford, both of Wis., assignors to DEC International, Inc., Madison, Wis.

Original No. 3,929,103, dated Dec. 30, 1975, Ser. No. 530,213, Dec. 6, 1974. Application for reissue Mar. 17, 1977, Ser. No. 778,696

Int. Cl.[2] A01J *5/04*

U.S. Cl. 119—14.08 **12 Claims**

15. A milking unit support and detacher mechanism comprising:

a main support column;

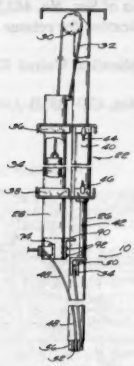
a vertically movable milker support column slidably mounted on said main support column;

a horizontally extending retractable milking unit support assembly mounted on said milker support column, said retractable milker unit support assembly adapted to support a milker unit on the outer end thereof when the milker unit is

attached to a cow for milking, said milker unit support assembly further adapted to be retracted from its extended position underneath the cow to a retracted position adjacent the cow;

a flexible retract member fastened at one end to said retractable milking unit support assembly; and

retract means for pulling on said flexible retract member to cause said milker unit support assembly to be moved from its extended position to its retracted position, said retract means including a power cylinder having a movable piston rod mounted on said main support column, said power cylinder



being operatively connected to said flexible retract member and to said milker support column, said power cylinder adapted when energized in its retract direction to pull on said flexible retract member and to also move said milker support column upwardly in a vertical direction, said retract means further including first and second pulleys, said first pulley mounted at the lower end of said main support column and said second pulley mounted on the end of the piston rod of said power cylinder, with said flexible retract member extending from said retractable milking unit support assembly downwardly and around said first pulley and then upwardly and around said second pulley and then anchored.

Re. 29,849

LEADING LINK TYPE INDEPENDENT SYSTEMS

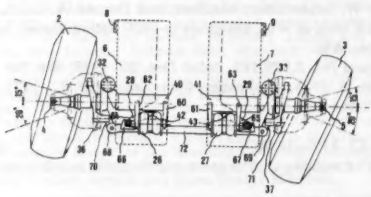
Andre Quigniot, 161, Rue de Larmor, 56100 Lorient (Morbihan), France

Original No. 4,010,813, dated Mar. 8, 1977, Ser. No. 665,391, Mar. 10, 1976. Application for reissue May 16, 1977, Ser. No. 797,602

Claims priority, application France, Mar. 11, 1975, 75 08313

Int. Cl.[2] B62D *7/00*

U.S. Cl. 180—73 C **6 Claims**



1. An independent suspension system of the leading link type for a vehicle, in which a pair of independent leading links are mounted on vehicle frame for oscillating movement, comprising a half axle fixed to each leading link, a stub axle pivotally connected to each half axle by a vertical swivel pin, an assembly mounted between each leading link and its associated half axle including an elastic chamber disposed in parallel with an anti-roll damper, a vertical axis pivot mounting effectively connecting said elastic chamber to its leading link, one of the ends of said anti-roll damper being connected to said vertical axis pivot mounting, and a ball-jointed connecting bar interconnecting both said vertical axis pivot mountings.

Re. 29,850

CLOSURE SPOUT HAVING TEAR-OUT PORTION

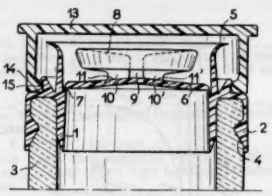
Maurice Labarre, Boulogne-sur-Seine, France, assignor to Breskin Industries Corp., White Plains, N.Y.

Original No. 3,459,315, dated Aug. 5, 1969, Ser. No. 706,296, Feb. 19, 1968. Application for reissue Oct. 17, 1977, Ser. No. 842,697

Claims priority, application France, Feb. 21, 1967, 67.95797

Int. Cl.[2] B65D *47/10*

U.S. Cl. 222—541 **7 Claims**



6. A molded plastic integral pouring closure for a container comprising a tubular body having a throat portion insertable into the neck of a container and a skirt spaced from and outwardly concentric of said throat portion integrally connected thereto for disposition circumferentially of the neck of the container, an extension of said throat defining a pouring spout, a sealing diaphragm extending transversely across the throat opening closing same, a tear-member connected to said diaphragm adjacent an edge thereof and disposed internally of said spout, said tear-member being substantially ring-shaped and having a closed arcuate portion thereof disposed in spaced substantially parallel relation to said diaphragm so as to thereby be adapted for pulling thereon for tearing out the diaphragm, said tear-member being integrally connected to said diaphragm at at least two closely adjacent points thereof.

Re. 29,851

INSULATING FLEXIBLE COMPOSITE ELEMENT AND PURGE SYSTEM

Otto A. Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

Original No. 3,917,471, dated Nov. 4, 1975, Ser. No. 465,848, May 1, 1974. Division of Ser. No. 125,549, Mar. 18, 1971, Pat. No. 3,811,239. Application for reissue Oct. 17, 1977, Ser. No. 843,130

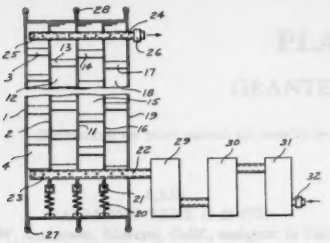
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1970, 2013115; Feb. 19, 1971, 2108110

Int. Cl.[2] B01D *51/00*

U.S. Cl. 55—267 **5 Claims**

1. An insulating flexible composite element comprising at least two spaced walls formed of flexible material having reflecting inner surfaces, said walls being spaced from each other in a shape retaining manner by at least one flexible spacing element formed of a perforated, soft, elastic, heat-insulating material, the perforations in said spacing element each forming a radiation chamber with the opposed walls of said flexible material, said radiation chambers with its reflecting walls and spacing element being enclosed by sheets of flexible material forming an envelope around said flexible walls, said envelope

forming a unitary part of the insulating flexible composite element, and means including valves for introducing dry gas



into and discharging moist gas from said chambers of said envelope.

Re. 29,852

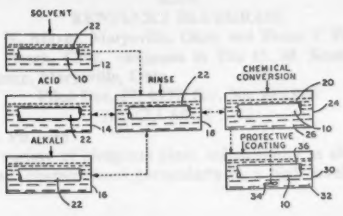
PROTECTIVE COATING FOR ARTICLES

Saul Kessler, Canoga Park, Calif., assignor to Joseph W. Aidlin, Los Angeles, Calif.

Original No. 3,992,454, dated Nov. 16, 1976, Ser. No. 429,911, Jan. 2, 1974. Continuation-in-part of Ser. No. 137,429, Apr. 26, 1971, abandoned. Application for reissue Feb. 3, 1977, Ser. No. 765,160

Int. Cl.² C07F *5/02*

U.S. Cl. 260—590 R **9 Claims**

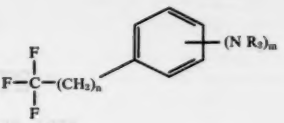


1. A composition comprising the wax-like reaction product having a decomposition temperature of at least 575° F of:

a polychloro-substituted aliphatic compound containing 1–8 carbon atoms *and having a boiling point above 100° C;*

a metal halide selected from a fluoride, chloride, bromide or iodide of aluminum, titanium or boron; and

a fluoroalkyl aryl compound of the formula:



where n is an integer from 1 to 4, m is an integer from 0 to 2, and R is selected from hydrogen, lower alkyl, lower alkanol, aryl or aralkyl.

Re. 29,853

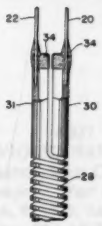
GAS IGNITER

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Original No. 3,842,319, dated Oct. 15, 1974, Ser. No. 290,256, Sep. 18, 1972. Continuation-in-part of Ser. No. 223,451, Feb. 4, 1972, abandoned. Application for reissue Aug. 11, 1976, Ser. No. 713,340

Int. Cl.² F23Q *7/00*

U.S. Cl. 219—270 **20 Claims**



1. The improvement in high temperature gas igniters *comprising an igniter body* having discrete spaced-apart terminal parts for connection to a source of electric energy, [which comprises] a plurality of electrical leads positioned in *appreciable direct overlapping* conductive [engagement] *interengagement* with respective ones of said terminal parts, said electrical leads extending from said terminal parts for such connection of the igniter and said electrical leads being of low electrical resistance relative to that of the igniter, and respective metallized coatings [having a coefficient of expansion approximating that of the terminal parts] about the respective leads and terminal parts in such conductive engagement [bonding] *and of such area as to effectively bond* the former to the latter respectively, while maintaining the spaced and hence electrically insulated relation thereof.

PLANT PATENTS

GRANTED NOVEMBER 28, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,335
ALMOND TREE (1-B-475)

Frederic W. Anderson, Merced, Calif., assignor to The Burchell Nursery, Inc., Modesto, Calif.

Filed Oct. 31, 1977, Ser. No. 847,323
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, which is open to dense, medium-to-small size, medium vigorous, medium in quantity of foliage, with medium size, ovate leaves having a crenate margin, and alternate, globose glands, blooms between Ne Plus Ultra and nonpareil, and a regular and heavy producer of well-distributed ovale nuts having a medium-to-late harvest period; the nuts—in harvest after Ne Plus Ultra but before Mission—being of medium-to-small size, soft shell, and with a relatively high percentage of kernel to nut; the variety being particularly characterized by being self-fertile and bearing heavily without pollenizers of any kind.

4,336
KENTUCKY BLUEGRASS

Eugene W. Mayer, Marysville, Ohio, and Torao T. Fuchigami, Long Beach, Calif., assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Dec. 27, 1977, Ser. No. 864,876
Int. Cl.[2] A01H *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A variety of bluegrass plant, substantially as shown and described, characterized particularly by a high level of resistance to disease and especially leaf spot disease, a desirable dark blue-green color throughout the growing season but particularly during cool periods of the year, a thick dense turf and persistance under a wide variety of environmental conditions.

4,337
AFRICAN VIOLET NAMED PINK ULLI

Konstantinos I. Koutantzis, West Chicago, Ill., assignor to Pan American Plant Company, West Chicago, Ill.

Filed Feb. 9, 1978, Ser. No. 876,278
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new variety of African violet plant, substantially as herein shown and described, characterized by its profuse production of medium pink blossoms clustered above abundant horizontally spreading, dark green foliage and by its year around blooming capability.

PATENTS

GRANTED NOV. 28, 1978

ERRATA

For CLASS	See PATENT NO.
405–051	4,126,998
405–258	4,126,999
405–261	4,127,000
405–261	4,127,001
405–239	4,127,002
405–202	4,127,003
405–202	4,127,004
405–227	4,127,005
405–171	4,127,006
405–171	4,127,007
152–323	4,127,166
180–148	4,127,186
229–015	4,127,304
404–015	4,127,346
404–016	4,127,348
404–045	4,127,349
404–065	4,127,350
404–072	4,127,351
404–074	4,127,352
008–181	4,127,382
422–005	4,127,383
422–109	4,127,384
422–158	4,127,387
422–258	4,127,388
422–201	4,127,389
235–433	4,127,407
528–413	4,127,513
528–093	4,127,514
521–112	4,127,515
521–137	4,127,516
521–098	4,127,547
252–062	4,127,556
528–273	4,127,560
528–199	4,127,561
528–094	4,127,562
536–050	4,127,563
528–481	4,127,564
528–283	4,127,565
583–283	4,127,566
424–248.5	4,127,572
546–103	4,127,573
546–090	4,127,574
546–345	4,127,575
424–265	4,127,576
546–097	4,127,577

546–205 4,127,578
546–017 4,127,579
546–114 4,127,580
546–250 4,127,581
546–302 4,127,582
564–340 4,127,583
562–533 4,127,603
562–606 4,127,604
568–581 4,127,613
261–041 B 4,127,627
427–249 4,127,659

PATENTS

GRANTED NOVEMBER 28, 1978

GENERAL AND MECHANICAL

4,126,902
BELT TYPE WEAPON
Raymond F. McKenna, 5599 N.W. 5th St., Apt. 34, Miami, Fla. 33126
Continuation of Ser. No. 622,044, Oct. 14, 1975, abandoned. This application Jun. 7, 1976, Ser. No. 693,337
Int. Cl.[2] A41F *3/02*
U.S. Cl. 2—338 **8 Claims**

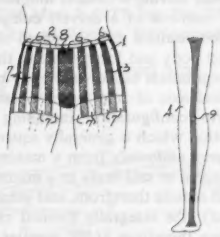
1. A belt which may be used as a weapon which includes a first elongate length and a second elongate length, each having a longitudinal centerline and each having an inner end and an outer end,

means linking the inner ends of the lengths, said means having a longitudinally extending centerline and a first end and a second end,

means interconnecting said first end to said inner end of said first length at the longitudinal centerline and interconnecting the second end to said inner end of said second length at the longitudinal centerline, and said interconnected belt lengths and means linking being of an overall length to encircle the girth of a wearer,

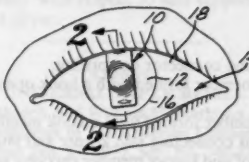
fastener means including a first heavy member on the outer end of the first elongated length and companionate means for hooked-up connection to the fastener means on the other end of the second elongate length.

4,126,903
T T IMPROVEMENTS RELATING TO CLOTHES
Douglas P. M. Horton, 5 Borthwick Ct., Beaumont, Adelaide, South Australia, Australia (5066)
Filed Oct. 8, 1976, Ser. No. 731,008
Claims priority, application Australia, Oct. 10, 1975, PC3526
Int. Cl.[2] A41B *9/04*
U.S. Cl. 2—409 **1 Claim**



1. A garment of a type comprised of fine threads of artificial fiber inter-woven in knitted manner to form a garment of the type generally known as a "pantyhose" and including a pants portion, legs and feet portion, characterized in that at least the pants portion of the garment is constituted by having a vertical pattern of spaced panels in which the threads are held substantially separate one from the other in a fish-net weave so as to leave open areas between adjacent threads of substantial area as compared to the area covered by the threads so as to provide substantial access for ventilation therethrough, and the areas between said panels being sheer knit, further characterized in that there is another of the panels vertically aligned along each of the back-of-leg portions of the garment so as to extend the length of the leg portion, further characterized in that a foot portion of the garment has, in relation to a portion of the garment which would normally encompass toes of an individual wearing the garment, an open weave character whereby to provide substantial ventilation.

4,126,904
ARTIFICIAL LENS AND METHOD OF LOCATING ON THE CORNEA
Dennis D. Shepard, 1414 S. Miller St., Santa Maria, Calif. 93454
Filed Mar. 31, 1977, Ser. No. 783,300
Int. Cl.[2] A61F *1/16, 1/24;* G02C *7/04*
U.S. Cl. 3—13 **14 Claims**

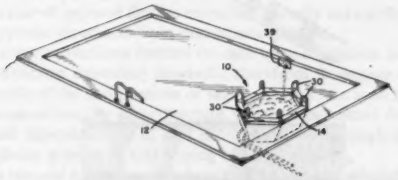


1. An artificial lens for eyes, said lens comprising:

an optical portion configured for placement upon the central anterior surface of the cornea, said optical portion being dimensioned to overlie less than the total anterior surface area of the cornea; and

a marginal haptic portion extending from said optical portion and including means adapted to extend through a portion of the eyeball for fixation of said haptic portion to the eyeball.

4,126,905
FLOATING THERAPY POOL
Clayton C. Russell, York, Pa., and Donald H. Witte, Detroit, Mich., assignors to Fox Pool Corporation, York, Pa.
Filed May 16, 1977, Ser. No. 796,980
Int. Cl.[2] A47K *3/18, 3/16*
U.S. Cl. 4—172 **15 Claims**

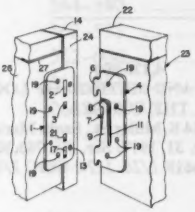


1. A floating therapy apparatus adapted to be floated and supported within a conventional swimming pool comprising a substantially water impermeable enclosure which is immersible in a swimming pool and adapted to have only the upper peripheral edge of said enclosure above the surface of said pool, a water inlet to bring filtered water from said pool filtration system into said enclosure, and a water outlet to discharge water from said enclosure, valving means for diverting at least a major proportion of the capacity of the swimming pool heater water into said enclosure, an air discharge means introduced below the water surface of said enclosure to receive air and create pressure waves in said enclosure and a blower means for supplying air into said enclosure through said air discharge opening.

4,126,906
WATERBED FRAME CONNECTOR

Doug L. Foust, 847 Rose Ave. #13, Pleasanton, Calif. 94566

Filed Nov. 23, 1977, Ser. No. 854,358
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—295 2 Claims

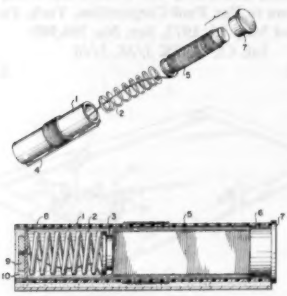


1. A bed frame connector comprising:
a. a keeper member formed with a hook opening and a lock opening;
b. a latch member formed with a hook member;
c. lock means connecting said keeper and latch members;
d. a portion of said keeper member carrying said hook opening is positioned at an angle of substantially 90° in relation to the other portion of said keeper member;
e. said opening in said keeper member is an open slot formed in the edge of said keeper member and said slot is narrower at its opening; and
f. said end of said lock member is dimensioned to register with the wide opening of said slot and to have an edge length greater than the width of said slot at its edge to prevent accidental horizontal movement and unlocking.

4,126,907
SPAR FLOAT RECOVERY CAPSULE

Donald C. Fish, 3189 Novus St., Sarasota, Fla. 33580

Filed Jun. 10, 1977, Ser. No. 805,514
Int. Cl.[2] B63B *21/52*
U.S. Cl. 9—9 1 Claim

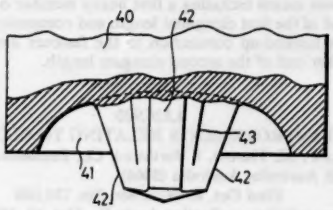


1. A spar float recovery capsule for attachment to various articles, such as fishing rod, a gun, a tackle box etc. which may accidently drop out into the water, a cylindrical capsule of water resistant material havine one end open and the other end closed, an expansion spring in said capsule, an airtight highly colored cylindrical float in said capsule having one end engaging said spring, a recovery line freely wound around the outer surface of said float, said recovery line of sufficient strength to support the article to which the cylinder is attached as the article is drawn upwardly through the water, a keeper plate in said cylinder and attaching the recovery line to the cylinder whereby the article to which the cylinder is attached may be drawn upwardly through the water and recovered, a plug of a delinquescent sealing material which resist normal atmospheric moisture accumulations but which dissolves after a predetermined interval of immersion in water to open the open end of the capsule at which time the ejection spring being released from pressure ejects the cylindrical float from the capsule and allows it to float to the surface of the water, said capsule has a pressure equalizing opening therein at the inner end of the expansion spring, said opening normally closed by a delinquescent sealing material which resists normal atmospheric moisture accumulation but which dissolves when immersed in water whereby when the article to which the capsule is attached falls into the water the sealing material closing the pressure equalizing opening will dissolve thereby equalizing the pressure within the capsule and allowing the expansion spring to quickly expand and force the float out of the capsule, and means for attaching the cylindrical capsule to the article to be salvaged, said attaching means providing sufficient attachment strength to permit the article to be drawn upwardly through the water in which it has become submerged.

4,126,908
THREADED FASTENER RECESS FORMING PUNCH

Peter J. Gill, 6, Heath Farm Rd., Codsall, Wolverhampton, England

Division of Ser. No. 706,035, Jul. 16, 1976, Pat. No. 4,089,357.
This application Jan. 18, 1978, Ser. No. 870,539
Claims priority, application United Kingdom, Jul. 19, 1975, 30366/75
Int. Cl.[2] B23G *9/00;* B21K *1/44*
U.S. Cl. 10—7 2 Claims



1. A punch for forming a cruciform type recess in the head of a threaded fastener having a central longitudinal axis in a manner to reduce cam-out of a driver, comprising a body having a central longitudinal axis, a punch nose extending outwardly from said body and located along the longitudinal axis thereof, the longitudinal axis of said body being alignable with the longitudinal axis of said fastener, said punch nose having a cruciform configuration including a (generally square) central portion which is generally square in cross-section and which tapers uniformly from a maximum cross-section at one end adjacent to said body to a minimum cross-section at the other end remote therefrom, said punch nose having four (a plurality of) ribs integrally formed on said central portion and radiating therefrom at 90° angular spacings with one rib extending outwardly generally normal to (from) each side, each of said ribs terminating in an outer wall which tapers downwardly and inwardly from said one end to said other end, and said outer walls defining a main cone angle of at least 40° and not more than 45°.

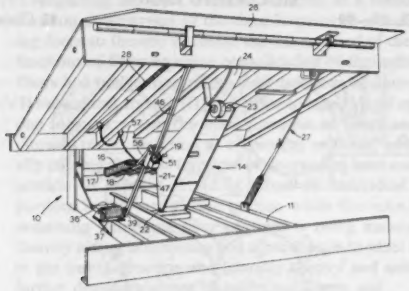
4,126,909
TORSION HOLD-DOWN

Vernon O. Smith, Ashley, and Ronald E. Abbott, Marion County, both of Ohio, assignors to Overhead Door Corporation, Dallas, Tex.

Filed Jul. 29, 1977, Ser. No. 820,307
Int. Cl.[2] B65G *69/24*
U.S. Cl. 14—71.3 19 Claims

16. In a dock leveler having a support structure, a ramp structure hingedly mounted on said support structure for

swinging movement about a substantially horizontal hinge axis, a lifting mechanism coacting between said structures for normally urging said ramp structure to swing upwardly about said axis, and a releasable hold-down mechanism coacting between said structures for normally preventing upward swinging movement of said ramp structure, said hold-down means being independent of said lifting mechanism and including a one-way latch device for permitting downward swinging movement of said ramp structure while restricting upward swinging movement thereof, comprising the improvement wherein said hold-down mechanism includes means operatively coacting between said latch device and one of said structures for imposing a downward holding force on said ramp structure when it is in an approximately horizontal working position, said means causing said downward holding force as imposed on said ramp structure to progressively decrease as said ramp structure is swung upwardly away from said approximately horizontal working position due to application of an external lifting force thereto, and said means including spring means which develops a spring force which increases as the ramp structure is swing upwardly away from said approximately horizontal working position.



4,126,910

MACHINE FOR TREATING THE INTERNAL SURFACES OF BOWL-SHAPED BODIES

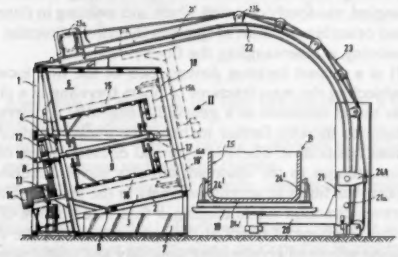
Rio Beer, Unterdorfstr. 5, Niederwil, Switzerland (CH-5524)

Filed Mar. 4, 1977, Ser. No. 774,412

Claims priority, application Switzerland, Mar. 24, 1976, 3694/76

Int. Cl.[2] B08B *9/08*

U.S. Cl. 15—56 **17 Claims**



1. A machine for treating the internal surfaces of buckets, kettles or analogous hollow bowl-shaped bodies, comprising a support; means for rotating said support about a first axis; carrier means including at least one parallel motion mechanism having a holder rotatable with said support and including first and second fulcra disposed at the opposite sides of said axis and defining pivot axes substantially parallel to said first axis, parallel first and second links supported by the respective fulcra and turnable about the corresponding pivot axes, and a third link articulately connected with each of said first and second links for movement relative thereto about additional pivot axes parallel to said first axis, said third link being located at one side of and being substantially parallel to said holder, said mechanism being deformable by centrifugal force which develops in response to rotation of said support and said holder whereby a portion of one of said links moves away from said first axis; a treating implement secured to said portion of said one link, said implement being moved into contact with the internal surface of a body into which said carrier means extends as a result of deformation of said mechanism by centrifugal force; and a housing for said support, said carrier means and said implement, said housing having an opening and a cover for said opening, said cover being movable between open and closed positions and having means for centering a bowl-shaped body with respect to said support in the closed position of said cover.

4,126,911

UNIVERSAL WIPER REFILL

Michael G. Mohnach, and William H. Harbison, both of Valparaiso, Ind., assignors to The Anderson Company, Gary, Ind.

Filed Jan. 17, 1977, Ser. No. 760,120

Int. Cl.[2] B60S *1/04*

U.S. Cl. 15—250.42 **5 Claims**

1. An elongate backing member adapted to be attached to a superstructure for holding a flexible windshield wiping element, comprising:

(a) a tubular portion having a longitudinal chamber for holding a retention bead on said wiping element,

(b) said tubular portion having a relatively narrow longitudinal slot opening into the chamber,

(c) a pair of opposed flanges extending laterally outwardly in opposite directions from said tubular portion,

(d) three projections formed on said tubular portion, each projection extending upwardly therefrom to engage the inside of the end portions of said superstructure such that pressure on the superstructure will be transmitted from said superstructure to said projections and through said tubular portion to said wiping element, and

(e) a tangent to the outer ends of said projections subscribes an arcuate path in a plane perpendicular to the longitudinal axis of said backing strip.

4,126,912

CLOSING ATTACHMENT KIT FOR SLIDING DOOR AND ANTI-FRICTION SUPPORT

W. Grant Johnson, 1642 Mockingbird Pl., Orange, Calif. 92667

Continuation-in-part of Ser. No. 655,639, Feb. 6, 1976, abandoned, and Ser. No. 764,450, Jan. 31, 1977, abandoned. This application Jun. 22, 1977, Ser. No. 808,793

Int. Cl.[2] E05F *1/02*; E05D *13/02*

U.S. Cl. 16—81 **33 Claims**

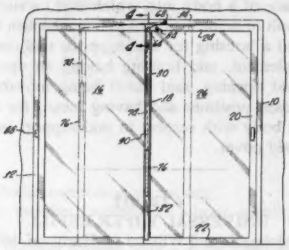
1. A gravity actuated door closer assembly for use with a sliding door assembly having a doorway frame including a pair of jambs and a lintel, and a door mounted to slide in the plane

of said doorway and having front and rear stiles, said door closer assembly comprising,

a vertically extending elongated guide including a contact portion conforming to an outwardly facing surface portion of said rear stile,

means for securing said guide to said rear stile with said contact portion of said guide contiguous to said outwardly facing surface portion of said rear stile,

a pulley,



means for rotatably mounting said pulley to and with said guide,

a hook,

means for connectinf said hook to said lintel at a point just forward of the closed position of said rear stile,

a weight slidable in said guide, and

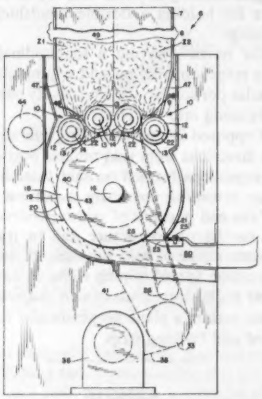
a line entrained over said pulley and connected to and between said hook and weight.

4,126,913

OPENING MACHINERY FOR TEXTILE FIBERS

James H. Roberson, Greenville, S.C., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed May 14, 1976, Ser. No. 686,344
Int. Cl.[2] D01B *1/00*
U.S. Cl. 19—96 **4 Claims**



1. Opening mechanism for textile fibrous material comprising:

(a) a primary opening element which has a spiked moving surface;

(b) means of feeding a single undivided mass of textile fibers towards said primary opening element;

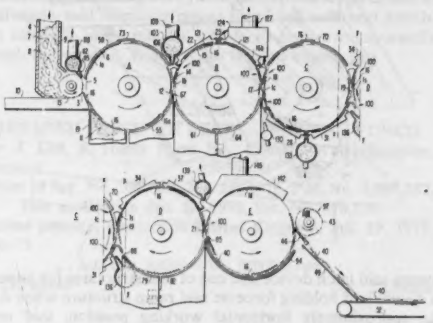
(c) a plurality of pairs of feed rolls located between. said primary opening element and said feeding means, the two rolls of each pair moving towards said primary opening element at their respective adjacent sides and forming a nip therebetween to which said fibers are fed and presented to said primary opening element, whereby said undivided mass of textile fibers is divided into as many individual masses as there are pairs of feed rolls.

4,126,914

PROCESS AND APPARATUS FOR TREATING FIBROUS MATERIALS FOR SUBSEQUENT PROCESSING

Allen R. Winch, Westfield, N.J., and Charles H. Chewning, Jr., Durham, N.C., assignors to Cotton, Incorporated, New York, N.Y.

Filed Jun. 22, 1976, Ser. No. 698,502
Int. Cl.[2] D01G *15/26*
U.S. Cl. 19—99 **13 Claims**



1. A process for treating a gross mass of tangled, randomly oriented fibers, which process comprises:

(I) conveying the gross mass of fibers in a generally longitudinal travel direction to a first location at a rate of above about 400 pounds per hour while gripping the gross mass of fibers;

(II) subjecting the gripped mass of fibers to a deflection at a first location to cause leading fiber portions of mass fractions of fibers to experience a deflecting motion generally transverse to the longitudinal travel direction and simultaneously subjecting the leading fiber portions of the mass fractions to an accelerating force in the first circular direction of travel for the fibers, the force tending to accelerate the mass fractions of fibers in the first circular travel direction and to thereby increase the linear speed of the mass fractions of fibers to a linear speed of above about 2,000 feet per minute, the deflecting in the transverse direction and accelerating force in the first circular travel direction while gripping the gross mass of fibers effecting plucking of the mass fractions from the gross mass of tangled, randomly oriented, fibers and assisting in thinning and orienting the mass of fibers in the travel direction and assisting in disentangling the fibers;

(III) at a second location downstream of the first location subjecting the mass fractions of fibers traveling in a circular travel direction to a generally tangential accelerating force to thereby further increase the linear speed of the mass fractions of fibers in a second circular travel direction sinuous to the upstream circular travel direction to cause the fibers to accelerate freely in the second circular travel direction while carding a first face portion of the mass fractions of fibers at the second location, the combined effects of accelerating sinuously and carding on the first face portion tending to thin and draft apart individual fibers in the travel direction and tending to separate and disentangle individual fibers laterally of the travel direction;

(IV) at a third location downstream of the second location subjecting the mass fractions of fibers traveling in a circular travel direction to another generally tangential accelerating force to thereby still further increase the linear speed of the mass fractions of fibers in a third circular

travel direction sinuous to the upstream circular travel direction to cause the fibers to accelerate freely in the third circular travel direction to a speed of above about 10,000 feet per minute while at the third location carding a second face portion on a mass fractions side opposite the first face portion of the mass fractions of fibers, the combined effects of accelerating sinuously and carding on the second opposite face portion tending to thin and draft apart individual fibers in the travel direction and tending to separate and disentangle individual fibers laterally of the travel direction;

(V) subjecting the mass fractions of fibers at a subsequent location downstream of the third location to a decelerating force to thereby decrease the linear speed of the mass fractions of fibers to cause consolidating of the individual fibers and condensing of the mass fractions of fibers;

(VI) subsequent to step (II) and prior to step (V), at at least one location where the mass fractions of fibers are in a circular travel direction at a constant velocity, additionally carding the mass fractions of fibers on at least one face portion to cause a retarding effect on individual fiber portions in the carded face portion while the velocity of remaining individual fiber portions is being maintained, thereby aiding in orienting and separating individual fibers in the travel direction and laterally thereof and aiding in further disentanglement of individual fibers; and

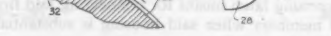
(VII) subsequent to step (V), recovering at a rate of above about 400 pounds per hour a consolidated mass of fibers.

4,126,915

APPARATUS FOR STRIPPING CARD FLATS AND THE LIKE

Stanley W. Zieg, Greenville; John P. Hill, Jr., Taylors, and John S. McCrary, Greenville, all of S.C., assignors to John D. Hollingsworth on Wheels, Inc., Greenville, S.C.

Filed Oct. 31, 1977, Ser. No. 847,416
Int. Cl.[2] D01G *15/76*
U.S. Cl. 19—111 **5 Claims**



1. Apparatus for stripping the flats and the like of a textile carding machine comprising:

a rotatable suction conduit having a plurality of circumferentially spaced suction slots therein;

fixed support carrying said suction conduit for rotation in superposed relation to said flats;

a flexible substantially imperforate shroud extending in sealing engagement (about) along said conduit in superposed relation thereto responsive to the suction exerted by said suction slots on said shroud;

means restraining at least one end of said flexible shroud in relation to said fixed support permitting rotation of the conduit within the shroud; and

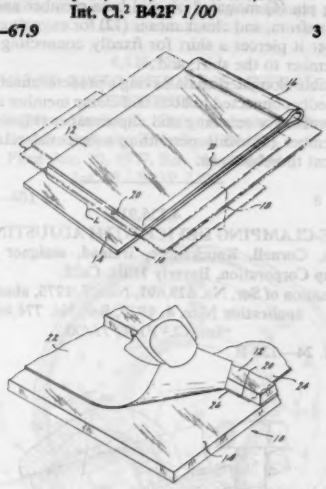
an opening defined by said flexible shroud presenting between opposed ends thereof a slot in said suction conduit in juxtaposed relation to successive flats for stripping the flats.

4,126,916

COUPON CLIP

Claude E. Thomas, 7066 Stone Brook, West Bloomfield, Mich. 48010

Filed May 18, 1977, Ser. No. 798,072
Int. Cl.[2] B42F *1/00*
U.S. Cl. 24—67.9 **3 Claims**



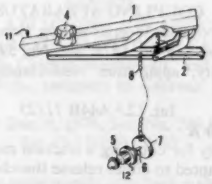
1. A clip made of a clear thermoplastic material having a thickness in the range of from about 1/16 to about ⅛ inch for holding coupons or the like and for tearing coupons or the like from a paper comprising: a first leg, a second leg overlaying said first leg, said first leg being shorter than said second leg, a resilient hinge connecting said first and second legs at one end and resiliently urging the opposite ends of said legs into engagement, said legs generally converging toward each other from said hinge toward the distal end of each leg for removably storing coupons therebetween, one of said legs having an edge generally extending across its width at its distal end, said edge facing the other of said legs and being relatively sharp and having a length in the range of at least 1½ to 3 inches whereby coupons or the like can be torn from a paper along said sharp edge and retained in said clip for storage, and wherein said one leg defines with said other leg a groove at least around 3½ long.

4,126,917

TIE PIN SHIRT ENGAGING MEANS

Minoru Nakatsuji, 6-4, 4-chome, Higashi-cho, Kichijoji, Musashino-shi, Tokyo-to, Japan

Filed Jan. 25, 1977, Ser. No. 762,413
Claims priority, application Japan, Sep. 10, 1976, 51-122063
Int. Cl.[2] A44B *9/00*
U.S. Cl. 24—85 R **3 Claims**



1. A tie pin comprising:

a clip member (**11**) or non-piercingly engaging a tie, said clip member including a pedestal (**1**), a clipping piece (**2**) pivoted to said pedestal and a spring member (**3**) for biassing

said clipping piece against the back of said pedestal to engage a tie between said pedestal and said clipping piece, said pedestal having a precious stone or ornament attached thereto;

a clamp member (5) having a base member (7), a shirt piercing pin (6) mounted on said base member and extending therefrom, and chuck means (12) for engaging said pin (6) after it pierces a shirt for fixedly connecting said clamp member to the shirt; and

a flexible elongated chain having a predetermined length and fixedly connected to both said clamp member and said clip member for retaining said clip member (11) to said clamp member (5) while permitting substantial relative movement therebetween.

4,126,918

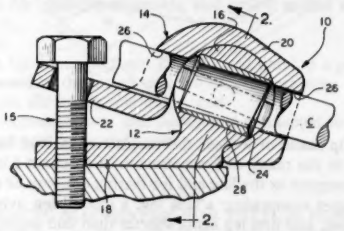
CABLE-CLAMPING DEVICE WITH ADJUSTING MEANS

Paul A. Cornell, Knockanore, Ireland, assignor to Electro-Clamp Corporation, Beverly Hills, Calif.

Continuation of Ser. No. 629,691, Nov. 7, 1975, abandoned. This application Mar. 4, 1977, Ser. No. 774,461

Int. Cl.[2] F16G *11/00*

U.S. Cl. 24—132 R **18 Claims**



1. A cable-clamping device of the rotary jaw type comprising:

a male member including a generally cylindrical head and a mounting tail extending therefrom, said male head having a cable-receiving bore;

a female member including a coupling sleeve and a mounting tail extending therefrom, said sleeve having a cable-receiving bore;

said female member adapted to receive said male member and rotate thereon between open and closed positions, said male and female bores being generally aligned in the open position to receive a cable and offset in the closed position to effect cable-clamping forces; and

an adjustment sleeve disposed within the male bore for adjusting the cable-receiving and cable-clamping capability of the device to enable the use thereof with cables of varying diameters, said sleeve including an internal cylindrical bore the longitudinal axis of which is angularly displaced from that of said adjustment sleeve.

4,126,919

COUPLING APPARATUS

Jakob Lassche, Nr. 255, Weerseloseweg, Enschede, Netherlands

Filed Sep. 10, 1973, Ser. No. 395,905

Claims priority, application Netherlands, Sep. 11, 1972, 7212304

Int. Cl.[2] A44B *11/25*

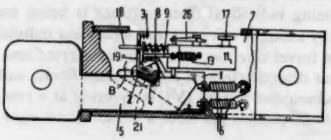
U.S. Cl. 24—230 A **9 Claims**

1. An assembly for coupling a traction member to a second member and adapted to effect release therebetween in delayed response to tractive force exerted between said members which exceeds a predetermined limit, comprising in combination:

axially slidable coupling portions on said members, one of which is defined by an opening in said traction member and the other by a tongue forming part of said second member and inserted into said opening, said tongue having an abutment surface facing in the direction of axial withdrawal of said tongue from said opening;

a housing slidable with respect to said traction member back and forth along said direction of axial withdrawal, a lock bolt movably carried by said housing for movement into and out of engagement with said abutment surface and resilient means normally urging said lock bolt in a direction to engage said abutment surface, and spring means connecting said housing and said traction member for urging said housing in that direction opposite to said direction of axial withdrawal, said housing being guided within said traction member and said housing and traction member having mutually engageable stop portions whereby to allow movement of said housing only to a certain point in opposition to said spring means which corresponds to partial withdrawal of said tongue, and said spring means being of sufficient strength to prevent movement of the housing to said certain point unless a tractive force is exerted between said traction member and said second member which exceeds said predetermined limit;

time delay means carried by said traction member for moving said lock bolt out of engagement with said abutment surface only after a predetermined time delay after said housing has reached said certain point and has returned to its initial position; and



means connected to said time delay means and moved by said housing member for actuating said time delay means only in response to movement of said housing at least substantially to said certain point, whereby initiation of automatic release action cannot be effected except in response to tractive forces exceeding said predetermined limit, said time delay means including a first member shifted in one direction in response to movement of said housing in the withdrawal direction and return spring means opposing such shifting of the first member to urge it in return direction opposite said one direction, motion-retarding means engaging said first member for slowing its return motion as effected by said return spring means, and a second member adapted to participate in return motion of said first member ultimately to engage and release said lock bolt, said means for actuating said time delay means comprising latch means for connecting said first and second members when said housing is substantially at said certain point.

4,126,920

SHOCK ABSORBER WITH BEAD-TYPE RETAINER AND METHOD AND APPARATUS FOR THE ASSEMBLY THEREOF

Yuji Takahashi, Isehara, and Akihiro Shimokura, Higashimine, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 641,036, Dec. 15, 1975, abandoned. This application Jun. 9, 1977, Ser. No. 805,223

Claims priority, application Japan, Dec. 28, 1974, 50-1415

Int. Cl.[2] B23P *11/00*

U.S. Cl. 29—243.52 **1 Claim**

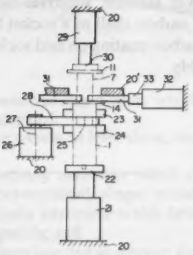
1. An apparatus for assembling a shock absorber of the type including an outer cylinder having a closed end and an open end and a slidable member extending through said open end of said outer cylinder, said slidable member having an annular portion projecting outwardly from the periphery thereof in sliding contact with said outer cylinder, said outer cylinder

having a reduced thickness portion formed by an annular concave recess in the outer peripheral surface thereof at a position adjacent said open end thereof, such that said slidable member is retained within said outer cylinder, said apparatus comprising:

first cylinder means for supporting said closed end of said outer cylinder and for selectively urging said outer cylinder axially;

first clamping means for selectively clamping the outer peripheral surface of said outer cylinder to prevent lateral movement thereof;

second clamping means for selectively contacting said open



end of said outer cylinder and for thus clamping said outer cylinder against said first cylinder means;

second cylinder means for selectively contacting said slidable member and urging said slidable member toward said outer cylinder to a position such that said annular projecting portion is between said closed end and said reduced thickness portion of said outer cylinder, said first cylinder means being operable when said slidable member is so positioned to urge said outer cylinder axially toward said second clamping means, thereby axially compressing said outer cylinder and deforming said reduced thickness portion inwardly and forming an annular bead extending into the interior of said outer cylinder.

4,126,921

CURTAIN OR DRAPE PACKING, TRANSPORTING AND STORING ARRANGEMENT

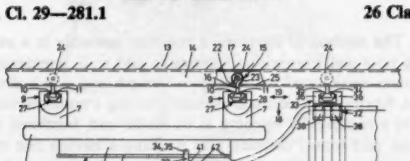
Hermann Pape, Laggenbeck, Fed. Rep. of Germany; Peter Schroeder, Zurich, and Rudolf Schmitz, Kastanienbaum, both of Switzerland, assignors to Gardisette Holding AG, Switzerland

Filed Nov. 29, 1976, Ser. No. 745,984

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553834

Int. Cl.[2] B25B *27/14*

U.S. Cl. 29—281.1 **26 Claims**



1. An arrangement for packing, storing transporting and hanging ready-made curtains or drapes, the curtains or drapes provided at upper edges thereof with holding means for fixing folds or pleats, the holding means including coupling means arranged thereon for coupling the holding means with at least one of a plurality of hanger means arranged at a mounted curtain or drape rail, the hanger means including a further coupling means complementary to and cooperable with the coupling means of said holding means, characterized in that a carrying means is provided for carrying and accommodating an entire width of a curtain or drape, and in that means are provided at said carrying means for detachably coupling said carrying means to at least one of the hanger means.

4,126,922

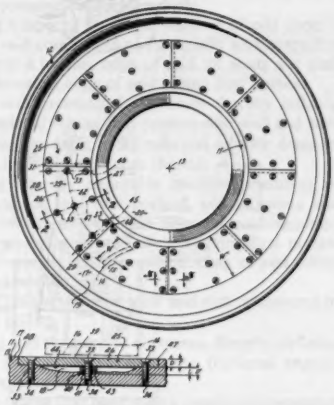
SAND MULLER RECONDITIONING METHOD AND STRUCTURE

Jeffrey D. Eagens, Cincinnati, Ohio, assignor to Brunswick Industrial Supply Company, Cleveland, Ohio

Filed Jun. 20, 1977, Ser. No. 808,361

Int. Cl.[2] B23P *7/00*

U.S. Cl. 29—401 D **6 Claims**



1. A method for reconditioning the worn bottom of a sand muller wherein a generally circular wear path in the form of an irregular depth ring having inner and outer peripheries has been formed in the bottom, the method comprising the steps of:

cutting a first annular seat into said bottom beyond the outer periphery of said wear path;

cutting a second annular seat in said bottom within the inner periphery of said wear path, said seats having like predetermined depths which are less than the maximum depth of said wear path;

positioning a wear plate over said wear path, said wear plate having outer and inner circumferences corresponding to the circumferences of said first and second annular seats, respectively, said wear plate having a thickness approximately equal to the depth of said seats; and

securing said wear plate within said first and second seats, a bottom surface of said wear plate overlying surfaces of said wear path and being spaced therefrom.

4,126,923

METHOD FOR ATTACHING A PLASTIC COVER AND APPARATUS EMPLOYING SAME

Raymond S. Cislak, Chicago Heights, Ill., and Louis Romanzi, Jr., Milford, Mich., assignors to Gateway Industries, Inc., Chicago, Ill.

Filed Dec. 9, 1976, Ser. No. 749,176

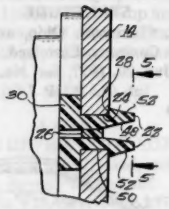
Int. Cl.[2] B23P *17/00*

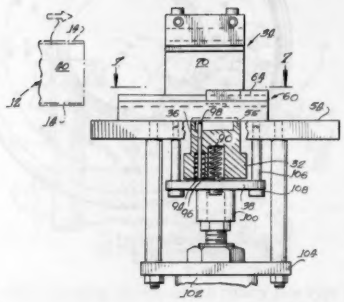
U.S. Cl. 29—416 **13 Claims**

1. A method for permanently attaching a plastic cover having a plurality of interlocking means each having at least a pair of spaced legs to a device having openings each for receiving said legs of an associated interlocking means, said method comprising aligning the plurality of pairs of spaced legs each with one of said openings, simultaneously inserting each one of

said pair of said legs into one of said openings, simultaneously forming plastic plugs by punching out an integral portion of said cover at each location between a pair of said legs and simultaneously inserting each of said plugs between said legs to hold them tightly and permanently in said openings.

8. An apparatus for attaching a plastic cover having at least a pair of spaced legs to a safety belt retractor frame having an opening for receiving said legs, said apparatus comprising





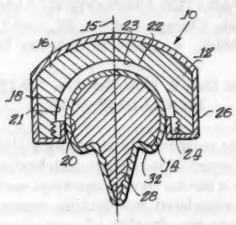
holding means for holding said retractor frame, support means adjacent said holding means for supporting said plastic cover with said legs in registration with said opening in said retractor frame, driving means cooperatively associated with said holding and support means for driving said holding and support means together to insert said legs into said opening and punch means cooperable with said support means for punching a plastic plug from said cover and inserting it between said legs to hold said legs tightly in said opening.

4,126,924

SOCKET AND JOINT PROSTHESES

Robert J. Akins, La Mesa, and Victor Slivenko, San Diego, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Feb. 7, 1977, Ser. No. 766,024
Int. Cl.[2] A61F 1/24
U.S. Cl. 29—423 **1 Claim**



1. A method for manufacturing socket prostheses for permanent or prolonged implantation in a living body, comprising the steps of

depositing a carbon shell on a hemispherical substrate form at elevated temperature, said deposited carbon shell having a coefficient of thermal expansion less than that of said substrate,

cooling said substrate form and said carbon shell deposited thereon to place said shell under compressive strain,

mounting said hemispherical substrate form and compressively strained shell in a hemispherical socket cavity of a suitably shaped socket element substrate,

removing said substrate form from said carbon shell to provide a socket element substrate-carbon shell assembly having said carbon shell as a socket bearing element, and

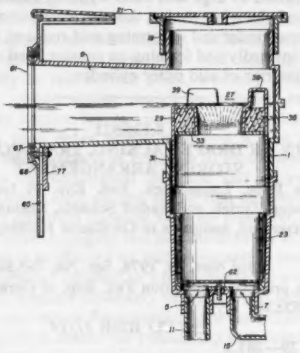
depositing a carbon coating on said socket element substrate-shell assembly.

4,126,925

SKIMMER ASSEMBLY

Virgil Jacuzzi, Islington, Canada, assignor to Jacuzzi Bros. Incorporated, Little Rock, Ark.

Filed Oct. 17, 1975, Ser. No. 623,398
Int. Cl.[2] B23P *19/00*
U.S. Cl. 29—428 **1 Claim**



1. The method of installing a skimmer assembly in a swimming pool wall comprising forming in said wall, a rectangular skimmer opening of predetermined length and width dimensions, fabricating a skimmer assembly having a tunnel terminating in a rectangular opening at its intake end, bordered by a flange, said tunnel opening plus its flanges having one of its dimensions exceeding the corresponding dimension of said wall opening and its other dimension slightly less than the corresponding dimension of said wall opening, inserting said intake end of said tunnel through said wall opening from the rear side thereof by first inserting one of the sides of less dimension than said opening, through said opening, followed by the opposite side, then backing up the skimmer assembly to bring the flanges of said opposite sides plus one flange of a connecting side, into engagement with the front side of said wall, leaving a slim opening along the remaining flange, affixing said skimmer assembly via its wall engaging flanges, to said wall, closing said slim opening with a closure, and then covering said wall and closure with a liner.

4,126,926

METHOD OF CONSTRUCTING A METAL PANELED FENCE

Anthony J. D'Amico, 10390 NW. 36th St., Coral Springs, Fla. 33065

Continuation of Ser. No. 503,339, Sep. 5, 1974, abandoned. This application Nov. 1, 1976, Ser. No. 737,281
Int. Cl.[2] B23P 11/02
U.S. Cl. 29—446 1 Claim

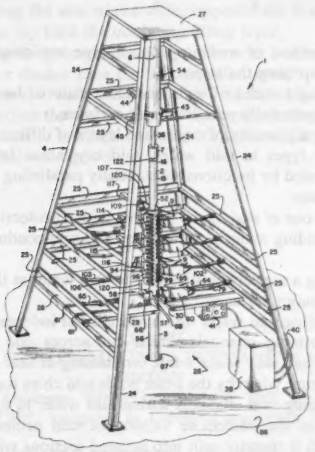
1. The method of constructing a light weight sheet metal fence comprising the steps of:
(a) fastening alternate panels, at least three, on opposite sides of spaced posts;
(b) inserting the relatively narrower width of a tensioning bar having a cross-sectional shape including a longer width and a relatively narrower width between opposite sides of adjacent panels; and
(c) rotating the bar once inserted to dispose the longer width between opposite sides of adjacent panels to add more tension to the panels.

4,126,927

APPARATUS AND METHOD FOR INSERTING RIGID CORES INTO FLEXIBLE TUBING

Ellis C. Woodward, Rte. 1, Box 145, Tunas, Mo. 65764; James D. Woodward, 212 South St., Box 40, and John Woodward, Jr., Rte. 1, both of Crane, Mo. 65633

Filed May 23, 1977, Ser. No. 799,251
Int. Cl.[2] B23P 11/02
U.S. Cl. 29—450 12 Claims



1. In an apparatus for inserting a rigid core into a segment of flexible tubing; said apparatus having means for retaining said tubing, motor means for translating said core, and pressurized air means for expanding a free end of said tubing, the improvement comprising:
(a) a stabilizer connected with and supported by said apparatus, including laterally adjustable members having an operative position wherein the same are adjacent to, in slightly spaced, nonclamping relationship with opposing sides of the free end of said tubing in an inflated condition, and including a locking mechanism selectively and rigidly retaining said adjustable members in said operative position for preventing bending and buckling of said tubing free end during insertion of said core therein by abuttment with said adjustable members.

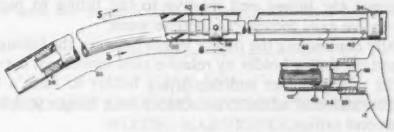
11. A method for assembling a cover of tightly fitting flexible tubing onto a rigid roller core, comprising the steps of:
(a) providing a structure for supporting said core and said tubing thereon; said structure including means for retaining said tubing therein;
(b) clamping said flexible tubing in said retaining means whereby first and second portions of said tubing extend from opposite ends of said retaining means; said first tubing portion extending a spaced apart distance associated with said core from said retaining means to a terminal edge of said tubing first portion, and having an unconstricted side wall;
(c) connecting pressurized air means with said tubing second portion for communication therewith;
(d) connecting a tapered tip to the first end of said core;
(e) translating said core bodily and coaxially with respect to said tube until a leading edge of said tip abuts and seals against the terminal edge of said tubing first portion;
(f) activating said pressurized air means thereby inflating said unconstricted tubing first portion side wall and radially extending the same to an enlarged interior diameter adapted for receiving said core therein;
(g) positioning laterally adjustable stabilizer members on opposing sides of said first portion, and adjusting said stabilizer members to a position disposed nonclampingly adjacent to an outer portion of said tubing first portion sides for preventing bending and buckling of said tubing during core insertion;
(h) continuing core translation until said core is covered by said flexible tubing;
(i) deactivating said pressurized air means, thereby deflating said tubing for resilient, constricting frictional engagement with said core;
(j) cutting said tubing first portion to a length commensurate with said core, at a first point on said tubing; and
(k) removing said tip from the first end of said core.

4,126,928

METHOD OF MAKING A SHAFT ASSEMBLY

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Filed Apr. 18, 1977, Ser. No. 788,357
Int. Cl.[2] B23P 9/00
U.S. Cl. 29—445 15 Claims



1. The method of making a shaft assembly comprising a rigid elongated frame tube for physically connecting a driving head at one end to a driven tool at the other end, said tube being bent so as to dispose the driven tool on an axis at an angle to the axis of the driving head, and a bendable rigid sheath tube of substantially smaller diameter than said frame tube extending generally concentrically through the bent frame tube for closely containing a flexible drive shaft for drivingly connecting the driving head to the driven tool, which method comprises
assembling onto a straight length of bendable sheath tube an elongated, thick-walled tubular continuous bushing of semirigid material, said bushing closely surrounding the sheath tube and extending along the length of the sheath tube which is later to be bent,
inserting the resulting subassembly, together with a spacer

bushing at each end of the sheath tube, in an enclosing outer shaft tube extending over the whole length of such subassembly and closely surrounding the said spacer bushings and continuous bushing,

thereafter subjecting the resulting final assembly of shaft tube and subassembly to a bending operation so as to bend the shaft tube over a length of the assembly in which the sheath tube is surrounded by the continuous semirigid bushing, and thereby cause the semirigid bushing to transmit bending force to the sheath tube while maintaining the sheath tube substantially concentric with the shaft tube over the bent length thereof, and leaving the semirigid bushing in place in the bent assembly to support the sheath tube in use.

4,126,929

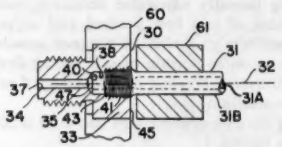
METHOD OF TUBE FITTING ASSEMBLY WITH SHOULDER MEANS

Ralph G. Ridenour, 525 Beer Rd., Mansfield, Ohio 44906

Continuation-in-part of Ser. No. 554,395, Mar. 3, 1975, Pat. No. 3,977,710, which is a continuation-in-part of Ser. No. 425,561, Dec. 17, 1973, abandoned. This application Feb. 11, 1976, Ser. No. 657,060

Int. Cl.[2] B21D *39/00*; B23P *11/02*

U.S. Cl. 29—523 **8 Claims**



1. A method of forming an assembly of a tubing and a fitting wherein the tubing has an inside wall surface and the fitting has a first orifice through a portion of the fitting and a second orifice through a portion of the first orifice with the fitting having an outside surface surrounding the second orifice comprising, the steps of:

holding the fitting;

forming helical thread means in one of the first and second orifices having a helical shoulder surface facing inwardly relative to the outside surface of the fitting;

holding the tubing;

inserting the tubing end substantially only axially into the first orifice of the fitting;

securing the tubing end relative to the fitting to prevent relative axial movement therebetween;

axially contracting the tubing length between the tubing end and the tubing holder by relative axial movement between the tubing holder and the fitting holder to form a bead from material of the contracted tubing length within the second orifice;

and radially expanding the bead through continued contraction of the tubing length to substantially fill the second orifice radially outwardly from the inside wall of the tubing and to engage the helical shoulder surface to seal the tubing to the fitting.

4,126,930

MAGNESIUM DOPING OF ALGAAS

Ronald L. Moon, Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 588,266, Jun. 19, 1975, abandoned. This application Nov. 7, 1977, Ser. No. 849,136

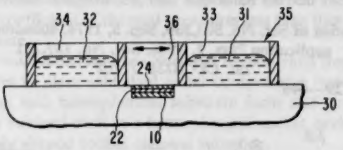
Int. Cl.[2] H01L *21/208*

U.S. Cl. 29—572 **6 Claims**

1. A process for making a photovoltaic cell comprising the steps of:

epitaxially growing on an n-type semiconductive body a contact layer of aluminum gallium arsenide doped with magnesium,

heating said layer and said semiconductor to diffuse magnesium dopant into said semiconductor to form a p-type layer adjacent said contact layer, and



attaching a first electrode to said contact layer and a second electrode to said semiconductor.

4,126,931

METHOD OF PASSIVATING HIGH-VOLTAGE POWER SEMICONDUCTOR DEVICES

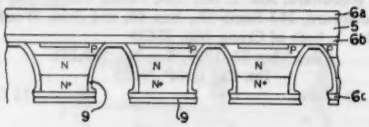
Luciano Gandolfi, and Rudolf Rocak, both of Milan, Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Apr. 11, 1977, Ser. No. 786,385

Claims priority, application Italy, Apr. 14, 1976, 22280 A/76

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—578 **7 Claims**



1. A method of making junction-type semiconductor devices, comprising the steps of:

providing a wafer of semiconductor material having a pair of substantially parallel major surfaces;

forming a plurality of crystalline layers of different conductivity types in said wafer, said crystalline layers being separated by junctions substantially paralleling said major surfaces;

coating one of said major surfaces with a protective layer of a shielding material softer than said semiconductor material;

adhering a supporting structure to said wafer at the other of said major surfaces;

subdividing said wafer into a plurality of independent chips by forming channels which cut across said protective layer and said wafer while terminating at said supporting structure whereby the latter holds said chips together, and widening said channels within said wafer to form undercuts in the immediate vicinity of said protective layer which is thereby split into isolated sections with projecting edge portions extending partly across said channels;

applying a continuous passivating film substantially uniformly to the walls of said channels and to said isolated sections including said edge portions;

mechanically removing said edge portions together with parts of said passivating film enveloping same, thereby severing film segments adhering to said isolated sections from the remainder of said passivating film overlying the channel walls; and

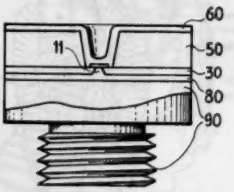
removing said isolated sections of said protective layer together with the adhering film segments from said chips.

4,126,932

STRUCTURE AND PROCESS FOR MILLIMETRIC WAVE SOURCES INTEGRATED IN A RADIAL WAVEGUIDE

Gerard Cachier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 29, 1976, Ser. No. 727,652
Claims priority, application France, Oct. 2, 1975, 75 30236
Int. Cl.[2] H01P *11/00, 3/00;* H01L *21/20, 23/50*
U.S. Cl. 29—580 6 Claims



1. A batch process for manufacturing a plurality of electromagnetic wave sources destined to operate on millimetric waves, each consisting of a diode embedded in a radial waveguide including a dielectric medium, comprising the following steps:

(a) forming mesa tables in a wafer containing a diode structure;

(b) coating the wafer with an insulating filling layer to reestablish the flatness of the wafer and then forming a metal deposit onto the mesa tables to serve as diode electrodes;

(c) bonding to the insulating filling layer a plate of a dielectric medium previously formed with openings to allow access to the electrodes;

(d) coating the wafer with a first metallic layer covering the plate of dielectric medium and the electrodes through the openings;

(e) grinding the side of the wafer opposite the first metallic layer to lay bare the insulating filling layer;

(f) coating the ground side of the wafer with a second metallic layer thicker than the first metallic layer;

(g) cutting the wafer into a plurality of individual sources centered on the electrodes, the sources including a part of the dielectric medium coated with the metallic layers as the radial waveguide.

4,126,933

METHOD FOR ASSEMBLING A PERMANENT MAGNET ROTOR

Gordon K. Anderson, Tustin, and Orvin E. Ball, Temple City, both of Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 14, 1977, Ser. No. 815,631
Int. Cl.[2] H02K *15/02*
U.S. Cl. 29—598 7 Claims

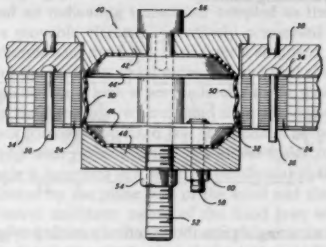
1. A method for assembling a permanent magnet rotor which comprises the steps of:

positioning a plurality of independently movable inner laminations, a plurality of pole piece laminations and at least one permanent magnet between retaining discs;

inserting fastening means through the retaining discs;

forcing by pneumatic means the inner laminations against the magnet, the magnet against the pole piece laminations and the pole piece laminations against the fastening means;

said pneumatic means applying a relatively equal pressure to each inner lamination; and



securing the fastening means to fixedly maintain the inner laminations, the magnet, and the pole piece laminations between the retaining discs.

4,126,934

METHOD FOR THE MANUFACTURE OF AN ELECTRODE FOR ELECTROCHEMICAL CELLS

Gerhard Richter; Konrad Mund; Ulrich Gebhardt, and Raghavendra Rao, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 30, 1975, Ser. No. 545,404
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1974, 2405475
Int. Cl.[2] H01M *4/88*
U.S. Cl. 29—623.1 20 Claims

1. A method for the manufacture of an electrode for an electrochemical cell comprising a Raney-noble metal catalytic layer disposed on a metallic support structure in layer form; wherein the method comprises the steps of:

(a) forming a layer disposed on said metallic support structure in layer form of a homogenous alloy of an active component comprising at least one of the metals of the platinum group of the Periodic System and an inactive component comprising at least one of the iron group metals of the Periodic System, wherein the content of said inactive component is at least 65 atom-percent of said alloy; and

(b) dissolving out the inactive component from said alloy, said forming comprising rolling said homogenous alloy into a thin foil, said alloy also constituting said metallic support structure, and dissolving out said iron group metal from at least one side of said foil superficially and maximally to a depth of 50 μm.

4,126,935

METHOD AND APPARATUS FOR MANUFACTURING WIRING HARNESSES

Warren J. Rhines, Convent Station, and Arnold R. Smith, Chester, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 31, 1977, Ser. No. 801,586
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—628 19 Claims

1. Apparatus for fabricating wiring harnesses in a continuous stream comprising:

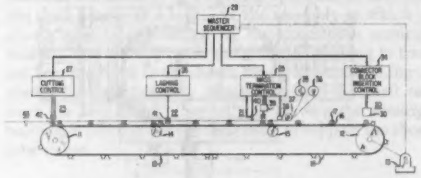
a movable carrier;

a plurality of connector block holding devices affixed to said carrier;

a connector block insertion station disposed along said carrier for selectively inserting connector blocks of varying sizes in preselected positions transverse to said carrier;

a mass-terminating station for selectively connecting electrical wires to connector blocks in said holding devices, said mass-terminating station being disposed along said carrier downstream from said insertion station;

a wire lashing station for selectively lashing subpluralities of said electrical wires into bundles, said lashing station being disposed along said carrier downstream from said mass-terminating station;



a wire cutting station for selectively cutting subpluralities of said electrical wires, said cutting station being disposed along said carrier downstream from said lashing station; and

control means for moving said carrier to sequentially carry said holding devices to each of said stations.

4,126,936

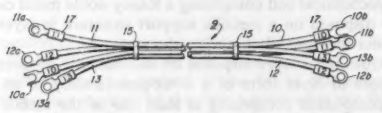
IDENTIFICATION SYSTEM FOR POINT TO POINT WIRING

Joseph A. Koller, 1900 Old Willow Rd., Northfield, Ill. 60093

Filed Sep. 29, 1977, Ser. No. 837,687

Int. Cl.[2] H01R *43/00*

U.S. Cl. 29—628 **7 Claims**



1. A method of applying identifying indicia to an electric wire, comprising the steps of

inserting one end of said wire into the hole in a tubular end portion of a metallic terminal member having a plastic sleeve overlying said tubular end portion,

placing said tubular end portion between a pair of crimping dies wherein one of said dies has an embossing surface having in the face thereof a recess in the shape of an alphanumeric character,

moving said dies towards one another to compress said wire, said tubular end portion and said sleeve between said dies to crimp said terminal onto said wire and simultaneously to emboss said alphanumeric character on said plastic sleeve.

4,126,937

MATERIAL AND METHOD FOR INTRODUCING IONIC SILVER TO DENTAL PULP

Franklin H. Ellis, and Edward A. Thibodeau, both of Rochester, N.Y., assignors to Sybron Corporation and Eastman Dental Center, both of Rochester, N.Y.

Filed Mar. 23, 1977, Ser. No. 780,467

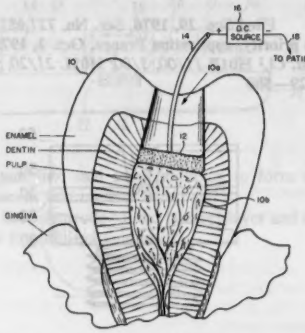
Int. Cl.[2] A61K *5/02*

U.S. Cl. 32—15 **2 Claims**

1. The method of applying ionic silver to a tooth undergoing dental restoration comprising the steps of:

preparing a cavity by removing infected dentin;

applying a layer of a soft and moldable carrier mixed with silver particles, within said cavity and in proximity to the pulp chamber of said tooth said carrier being hardenable, allowing the carrier to harden; and



causing positive direct in the range of 1 to 40 microamperes to flow through the layer into adjacent tissue for a time period.

4,126,938

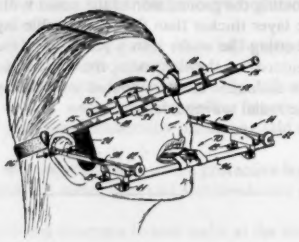
JAW MOVEMENT SIMULATION

Robert L. Lee, 22937 Grand Terrace Rd., Colton, Calif. 92324

Division of Ser. No. 485,158, Jul. 1, 1974, Pat. No. 4,034,474. This application Nov. 18, 1976, Ser. No. 742,977

Int. Cl.[2] A61C *9/00*

U.S. Cl. 32—20 **11 Claims**



1. Dental apparatus comprising:

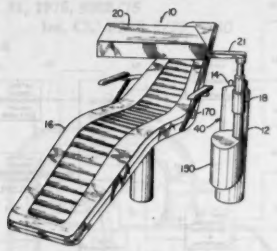
a dental clutch to be mounted on the teeth or gums of one of a patient's jaws; and

a tooth separator supported solely by said clutch including a separator plate positioned on the forward position of said clutch, said separator plate having a smoothly arched surface to be engaged by the teeth or gums of the patient's other jaw the height of said plate being such as to separate the back teeth of said other jaw from the clutch sufficiently to prevent interference of said back teeth with said clutch and the teeth of said one jaw during lateral mandibular movement relative to said other jaw, said surface being arched from side to side with the center of said arch being near the center of the clutch and the curvature of said surface being on a relatively large radius so that said movement with the edges of the teeth of said other jaw engaging said surface is smooth and without jerky vertical movement.

4,126,939
REMOTE-CONTROLLED TABLE

Charles J. Pyne, Jr., Littleton, Colo., assignor to P.P.B. Enterprises, Denver, Colo.

Filed Sep. 9, 1976, Ser. No. 721,894
Int. Cl.[2] A61C 19/02
U.S. Cl. 32—22 12 Claims

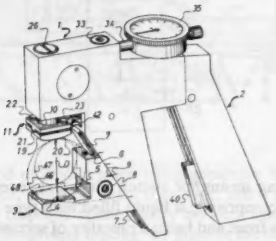


1. Dental appliance stand apparatus adapted for use in conjunction with a dental patient chair, comprising a base housing and a tray extending from said housing, and tray positioning means in said housing drivingly connected to said tray for advancing said tray between a first position location directly over the chair and a second position to one side of the chair, said positioning means including a rotatable drive screw having helical flighting around its peripheral surface, drive screw follower means engaged with said helical flighting on said drive screw and being movable parallel to the longitudinal axis of said drive screw in response to rotation of said drive screw and said follower means also being rotatable and engageable with said tray for imparting motion to said tray, drive means for reversibly rotating said drive screw, and guide means associated with said follower means for imparting rotational movement to said follower means and to said tray in combination with the movement of said follower means and said tray parallel to said drive screw between the first and second positions.

4,126,940
ADJUSTABLE FORK GAUGE

Georges Lendi, Crissier, and Adriano U. Zanier, Prilly, both of Switzerland, assignors to Tesa S.A., Vaud, Switzerland

Filed May 13, 1977, Ser. No. 796,555
Claims priority, application Switzerland, Jun. 11, 1976, 7393/76
Int. Cl.[2] G01B 5/02, 5/08
U.S. Cl. 33—147 F 10 Claims

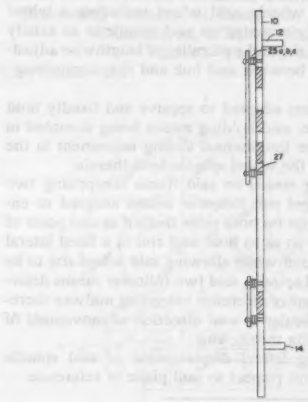


1. An adjustable fork gauge comprising a main body; said body having a slide on which a fixed jaw is slidably and adjustably mounted, said fixed jaw being formed from a slide block having an anvil with a plane face integral with said slide block; a spring clamping jaw means mounted in opposition to said anvil for pressing a portion of a part to be measured towards the anvil of the fixed jaws; a feeler rod for said part to be measured, said feeler rod being displaceably mounted in a bearing of the clamping jaw means whereby the axis of said feeler rod is perpendicular to the plane of the anvil of the fixed jaw; a contact means mounted on said feeler rod to emerge from said clamping jaw means for contacting said part to be measured; and an indicating transducer coupled to the body and having a movable element operatively connected to the feeler rod; wherein said fixed jaw has a lateral abutment means for supporting the said part to be measured and said abutment means has a plane face which is perpendicular to the plane face of the anvil of the fixed jaw; wherein said slide of the body and said slide block forming said fixed jaw are inclined at the same acute angle (A) with respect to the axis of the feeler rod and said acute angle is inscribed in a plane perpendicular to the two planes constituted by the plane face of the anvil and the plane face of the lateral abutment means of the fixed jaw; wherein said clamping jaw means includes a floating shoe at its end in opposition to said anvil, said floating shoe having a cylindrical bearing surface whose generatricies are, during working, parallel at least to the plane of the lateral abutment means of the fixed jaw; wherein said floating shoe is pivotally mounted on a linear pivot disposed between said end of the clamping jaw means and the floating shoe and the pivotal axis of which is perpendicular to the plane face of the lateral abutment means of the fixed jaw; and wherein said floating shoe is connected to the said end of the clamping jaw means by at least one retaining member.

4,126,941
OUTLET BOX LOCATOR

J. Evan Clarke, P.O. Box 291, Thorneville, Ohio 43076

Filed Jun. 30, 1977, Ser. No. 811,526
Int. Cl.[2] G01B 5/14
U.S. Cl. 33—180 R 5 Claims



1. A template for vertically and horizontally positioning outlet boxes on studs of buildings under construction comprising:

an elongated flat plate member having a series of notches formed therein, said plate and said notches having a cross-direction in the order of that of a stud and an outlet box;

said notches having its lowermost ledge at a height corresponding one each to the height desired for the several outlet boxes to be installed on a stud and wherein its upper ledge is sufficient in height to accomodate an outlet box;

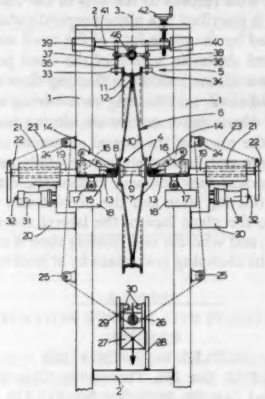
a pair of guides positioned at the upper and lower ends of said elongated member and wherein the spacing there between is slightly greater that a stud to which said outlet box is positioned; and

means for removing said securing means from said spacers for addition thereto or subtraction therefrom to vary said spacing.

4,126,942
APPARATUS FOR DETECTING LATERAL IRREGULARITIES OF THE RIM OF A WIRE SPOKE WHEEL

Cornelis C. Damman, Diemen, Netherlands, assignor to Holland Mechanics B.V., Diemen, Netherlands

Filed Sep. 19, 1977, Ser. No. 834,767
Claims priority, application Netherlands, Sep. 17, 1976, 7610389
Int. Cl.[2] G01B 5/255
U.S. Cl. 33—203.12 8 Claims



1. An apparatus for detecting lateral irregularities of the rim of a wire spoke wheel, in particular for use in a machine for centering such spoke wheels, said wheel including a wheel spindle, a hub rotatably mounted on said spindle in an axially fixed position, a wheel rim and a plurality of lengthwise adjustable spokes extending between said hub and rim, comprising

a frame;

spindle holding means adapted to receive and fixedly hold said wheel spindle, said holding means being mounted in said frame for free longitudinal sliding movement in the axial direction of the wheel spindle held therein;

wheel rim retaining means on said frame comprising two oppositely arranged rim follower means adapted to engage said wheel rim on both sides thereof at one point of its circumference so as to hold said rim in a fixed lateral position at said point while allowing said wheel rim to be rotated about said spindle, said two follower means determining a fixed plane of reference extending midway therebetween perpendicular to said direction of movement of said spindle holding means; and

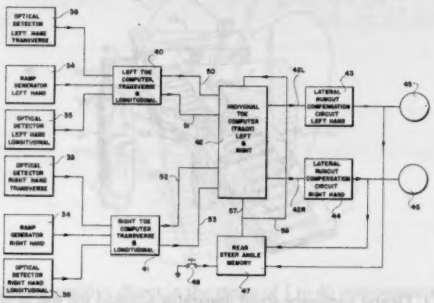
means for detecting lateral displacement of said spindle holding means with respect to said plane of reference.

4,126,943
WHEEL ALIGNMENT APPARATUS AND METHOD

David A. Senften, Florissant, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed May 20, 1977, Ser. No. 798,780
Int. Cl.[2] G01B 11/26
U.S. Cl. 33—228 5 Claims

5. A method for finding the alignment of vehicle wheels of the steerable type in terms of the substantially true line of travel of the wheels of non-steerable type, said method comprising: mounting angle measuring devices on the non-steerable wheels and cooperating devices on the steerable wheels; operating said angle measuring devices in conjunction with each other and with said cooperating devices to generate signals indicative of the angular position of the plane of rotation of the non-steerable wheels relative to a reference axis; processing said signals to arrive at the substantially true line of travel of the non-steerable wheels relative to the reference axis on the vehicle; removing said measuring devices and cooperating devices and repositioning the same on the steerable wheels and on the non-steerable wheels respectively; operating said angle measuring devices in conjunction with each other and with said cooperating devices to generate signals indicative of the angular position of the plane of rotation of the steerable

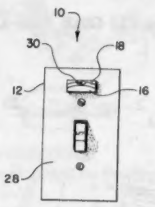


wheels relative to the reference axis; combining the signals generated by operating said angle measuring devices with said processed signals to correlate the angles of alignment of the steerable wheels with the angular position of said non-steerable wheels in terms of their substantially true line of travel; and displaying the result of combining signals in terms of steerable wheel alignment relative to the substantially true line of travel.

4,126,944
DISPOSABLE SWITCH PLATE AND RECEPTACLE COVER SPIRIT LEVEL

David H. Burkhart, 121 Ashe Ave., Raleigh, N.C. 27605

Filed Dec. 8, 1977, Ser. No. 858,547
Int. Cl.[2] G01C 9/28
U.S. Cl. 33—347 3 Claims



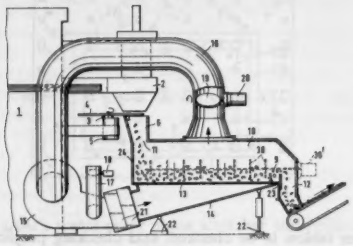
2. A leveling means for switch plate and receptacle cover type articles comprising: a liquid filled bulb type bubble spirit level having a front and back; a plurality of serrations disposed over at least a portion of the back of said level; a relatively flat interface having front and back surfaces; a relatively permanent adhesive layer disposed on the front surface of said interface whereby said interface can be permanently secured to the serrated rear surface of said level; and a relatively weak adhesive layer disposed on the rear surface of said interface whereby said interface can be removably attached to the front of said plate or cover to allow level determination and orientation of the same during installation and said level can be removed when said installation is completed.

4,126,945

METHOD AND APPARATUS FOR BULK MATERIAL TREATMENT

Josef Manser, Uzwil, and Georg Dankesreiter, Oberburen, both of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Jul. 30, 1976, Ser. No. 710,343
Claims priority, application Switzerland, Jun. 14, 1976, 7495/76; Jul. 31, 1975, 9988/75
Int. Cl.[2] F26B *3/22, 3/30*
U.S. Cl. 34—4 57 Claims



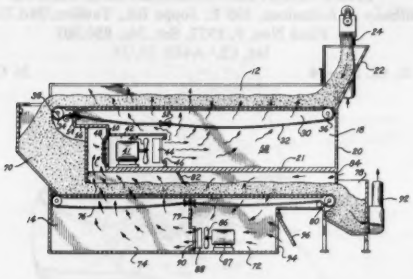
1. A process for bulk drying short pasta products in an air stream, which comprises the steps of forming the products into a bed which extends through a drying zone from an inlet to an outlet thereof, creating a generally upward flow of a gaseous medium, through the bed of products, of such intensity as to continuously fluidize the bed, and augmenting the rotation of the products and their movement relative to one another.

4,126,946

GRAIN DRYING APPARATUS AND PROCESS

James F. Buffington, R.R. #4, Plymouth, Ind. 46563, and Lee E. Norris, R.R. #1, Box 341, Mentone, Ind. 46539

Division of Ser. No. 701,284, Jun. 30, 1976, Pat. No. 4,045,882.
This application May 5, 1977, Ser. No. 794,063
Int. Cl.[2] F26B *17/12*
U.S. Cl. 34—13 6 Claims



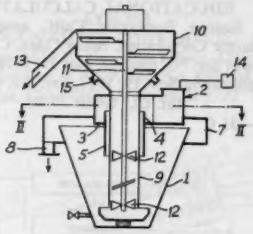
1. A method of drying grain using apparatus having a first grain conveyor, a second grain conveyor, and a grain receiving container disposed operationally between said conveyors: said method comprising heating the grain in the first conveyor to a temperature sufficient to drive off the moisture near the surface of the kernels while leaving the moisture near the center, holding the grain in mass without substantial cooling in said grain receiving container for a period of time to permit the moisture near the center of the kernels to migrate to near the surface and the kernels to become of a substantially uniform temperature, heating the grain in said second conveyor to a temperature and for a time sufficient to drive off the migrated moisture, and thereafter cooling the grain to ambient temperature.

4,126,947

SETTLING AND DRYING APPARATUS

Jean Labouygues, 2 Cours Sablon, 63000 Clermont Ferrand, France

Filed Jun. 29, 1977, Ser. No. 810,926
Int. Cl.[2] F26B *19/00*
U.S. Cl. 34—69 6 Claims



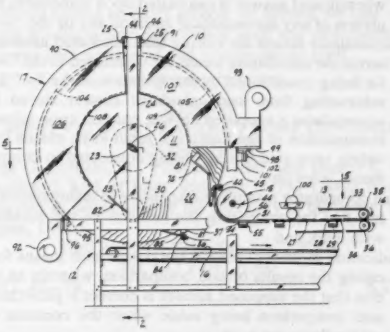
1. In a settling and drying apparatus comprising a settling tank with an overflow level, a distributor having a tangential inlet conduit for bringing a liquid with suspended solids to the settling tank, the distributor having an overflow level, overflow tube means extending from the overflow level of the distributor to below the overflow level of the settling tank for directing liquid and suspended solids which overflow from the distributor into the overflow tube toward the bottom of the tank.

4,126,948

ENVELOPE DRYING MACHINE

Hubert R. VerMehren, Florissant, Mo., assignor to Ga-Vehren Engineering Company, St. Louis, Mo.

Filed Jul. 31, 1975, Ser. No. 600,933
Int. Cl.[2] F26B *15/08*
U.S. Cl. 34—150 2 Claims



2. In an apparatus for drying pre-gummed envelopes:
(a) support means,
(b) shaft means rotatively mounted to the support means,
(c) drive means continuously rotating the shaft means,
(d) drying wheel means including at least two rigid discs mounted on said shaft means each disc including a plurality of outwardly extending curved slots formed therein, open-ended at the circumference of said disc to receive the envelopes the slots including an associated pressure means to retain the envelopes against outward movement,
(e) drying means supplying drying air to said gummed envelopes,
(f) adjustable stop means including a positive stop member operatively carried by the support means and disposed adjacent at least one of said discs, said stop member extending across said envelope receiving slots in engageable

relation with said envelopes and being adjustable lengthwise of said slots to selectively predetermine the extent to which said envelopes are initially received within said slots upon entry therein, and

(g) discharge means for urging said envelopes outwardly of said slots.

4,126,949

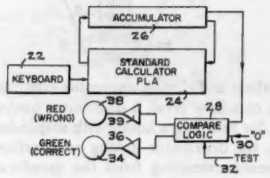
EDUCATIONAL CALCULATOR

Richard B. Simone, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 650,536, Jan. 19, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,784

Int. Cl.[2] G09B *19/02*

U.S. Cl. 35—31 C **3 Claims**



1. An educational calculator, comprising:

a keyboard, including

a plurality of numerical input keys for entering operands and a supposed answer,

a plurality of mathematical function keys for selecting mathematical functions,

an "=" key, and

a test key;

calculating means for performing mathematical calculations selected by manipulation of the mathematical function keys upon operands entered by manipulation of the numerical input keys to produce a calculated answer, wherein said answer is calculated upon subsequent manipulation of any mathematical function key or the "=" key;

accumulator means for storing said calculated answer;

wherein the calculating means are connected to the "=" key for being conditioned by manipulation of the "=" key for subtracting from said calculated answer stored in the accumulator a supposed answer entered upon subsequent manipulation of the numerical input keys; means for providing zero; said test key being connected to comparator means wherein

said comparator means are responsive to manipulation of the test key for comparing the contents of the accumulator with zero; and

indication means coupled to the comparator means for indicating the results of said comparison, wherein an indication that the supposed answer is correct is provided upon said comparison being made when the contents of the accumulator are zero.

4,126,950

TEACHING APPLIANCES FOR PROGRAMMED TEACHING

Cornelius Jensen, D-2251 Sollwitt, Fed. Rep. of Germany

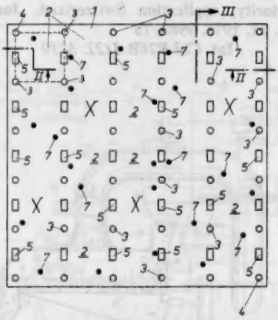
Filed Apr. 1, 1977, Ser. No. 783,747

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614218

Int. Cl.[2] G09B *3/00*

U.S. Cl. 35—48 R **16 Claims**

1. In a teaching appliance for programmed teaching of the kind including a laying out board and answer tablets and means for securing said tablets against lateral displacement, said tablets being laid on said board in a prescribed fashion, the invention which comprises a support member for supporting said laying out board, said support member having checking projections transversing said board and said answer tablets being provided each with a checking hole for receiving said checking projections, said laying out board being movable to a raised laying out position so as to allow said answer tablets to be laid down, and to a lowered checking position so as to allow said



answer tablets to be checked, said checking projections projecting through said laying out board from below when said board is in the checking position, and said checking projections fitting into said checking holes in said tablets when the same are correctly laid down on said board.

4,126,951

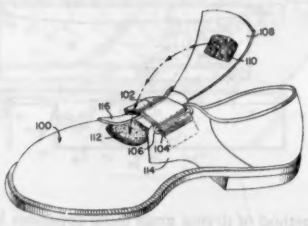
SHOE CLOSURE ASSEMBLY AND SHAWL

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Nov. 9, 1977, Ser. No. 850,007

Int. Cl.[2] A43B *23/26*

U.S. Cl. 36—54 **24 Claims**



1. In a shoe having an opening comprising a combination of

1. closure assembly comprising

a. a flexible closure strap having a fixed end on one side of said opening, and a free end;

b. anchor means on a second side of said opening adapted to receive the free end of said flexible closure strap; and

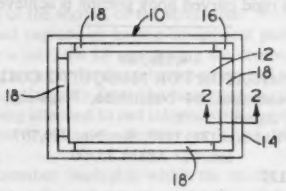
c. hook and loop fastener means to secure said strap across said opening

2. a shawl adapted to cover said opening including retaining means cooperating with said strap for securing said shawl positioned over said opening.

4,126,952
ARTISTS' WATER COLOR PAPER STRETCHER AND HOLDER

Gayle C. Weisfield, Box 311, Lyle, Wash. 98635; Robert D. Weisfield, Box 311, Lyle, Wash. 98635, and Peter Momcilovich, Seattle, Wash., assignors to Robert D. Weisfield and Gayle C. Weisfield, both of Lyle, Wash.

Filed Nov. 15, 1976, Ser. No. 741,742
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—156 11 Claims



1. An artist's water color paper stretcher and holder, comprising:

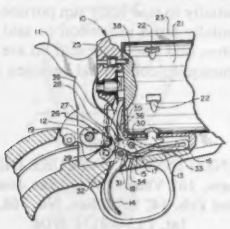
(a) a board having a substantially flat central surface and a surrounding rim defining a groove along the perimeter of the flat surface; and

(b) a wedge having a base, opposite sides which are flexibly dependent from the base at an angle to form a taper, and a top opposite the base having an opening to permit the sides to be forced inwardly to receivably engage in the groove so that when wet paper is placed on the central surface with its edges extending over the groove the wedge may be inserted in the groove to secure the paper to the board during drying and thereafter.

4,126,953
SINGLE ACTION REVOLVER WITH SAFETY LOCKING CYLINDER

Richard J. Casull, Freedom, Wyo. 83120

Filed Jan. 14, 1977, Ser. No. 759,416
Int. Cl.[2] F41C *19/14*
U.S. Cl. 42—67 7 Claims



1. In a single action revolver the improvement which comprises

(a) a hammer having a cavity therein housing an oscillating arm trippet containing a head and a cam angled toe, said trippet being fastened to a revolver frame by a hammer axis screw which passes through said hammer and the head of the oscillating arm trippet, said oscillating arm trippet being capable of pivotal movement about said axis screw:

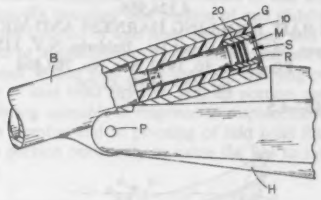
(b) a cylinder latch spring and a cylinder latch, said cylinder latch being positioned above the cylinder latch spring in the revolver frame between a cylinder and a trigger guard, the cylinder latch being tensioned by the cylinder latch spring to engage in a notch in the cylinder; and

(c) said hammer, oscillating arm trippet and cylinder latch being so positioned that when the hammer is rotated backward about the axis screw the cam angled toe of the oscillating arm trippet rotates and engages the underside of a cylinder latch arm thereby lifting the cylinder latch arm, compressing the cylinder latch spring and pivoting the cylinder latch out of the cylinder notch thereby allowing the cylinder to rotate.

4,126,954
GUN SHELL CONVERTER

Edward Plummer, 1623 Hagley Rd., Toledo, Ohio 43612

Filed Dec. 9, 1977, Ser. No. 859,004
Int. Cl.[2] F41C *21/10*; F42B *5/22*
U.S. Cl. 42—77 12 Claims



1. A converter for using a smaller gauge ammunition shell in a larger gauge gun comprising:

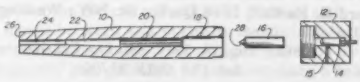
(A) a cylindrical plastic sleeve having an outer diameter and length simulating the ammunition for the larger gauge gun with an outwardly extending flange portion around one end of said sleeve to correspond to the base rim of the larger gauge ammunition shell, and having an inner cylindrical hollow portion simulating the outer cylindrical surface of the smaller gauge ammunition shell and having a reduced section at one end for frictionally engaging the opening end of said smaller gauge shell, and

(B) a metal sleeve inserted in the other end of said plastic sleeve having an outer groove for seating the base rim of the smaller gauge ammunition shell and surrounding the metal base portion of said smaller gauge shell.

4,126,955
HIGH VELOCITY TAPERED BORE GUN AND AMMUNITION

George G. Coffield, Jr., Pleasant Valley, and Dennis L. Beug, Davenport, both of Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 17, 1977, Ser. No. 778,416
Int. Cl.[2] F41C *21/00*
U.S. Cl. 42—78 6 Claims



1. A high velocity tapered bore gun and ammunition consisting of:

a gun having a barrel with a chamber at one end and a muzzle section at the other,

said chamber having a bore of relatively larger diameter,

said muzzle section having a bore relatively smaller diameter,

said gun having a tapered bore extending between said ends,

an ammunition package adapted to fit into said chamber,

said package having a projectile of a diameter sufficient to pass through said muzzle section without deformation,

said projectile being encased in a deformable material of a

diameter sufficient to fit into said chamber without deformation,

propellant means rearwardly of said deformable material which, when ignited, will expand and thus propel deformable material through said gun barrel,

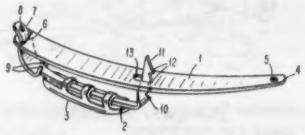
said tapered bore reducing the diameter of said deformable material to the muzzle diameter for ejection following ejection of said projectile, said deformable material increasing in length as it reduces in diameter to maintain its original volume, said deformable material imparting additional energy and acceleration to said projectile as said deformable material elongates, said projectile having a greater velocity than that of said deformable material and said propellant.

4,126,956

FISH BAIT TROLLING HARNESS AND METHOD

Hans Bayer, 3525 Bay Front Dr., Baldwin, N.Y. 11510

Filed Feb. 10, 1977, Ser. No. 767,464
Int. Cl.[2] A01K *83/06*
U.S. Cl. 43—4.5 **10 Claims**



1. An improved fish bait harness comprising an arcuate blade for insertion into one side of the head of the fish bait and lengthwise through the body of said bait until the front end of said blade protrudes from the tail of said bait, a locking member having a curved blade as its main portion pivotally attached to the back end of said arcuate blade, said curved blade providing the space to clamp said head and the contiguous part of said body between said arcuate blade and said main portion, said locking member having a terminal portion directed toward said arcuate blade to permit said terminal portion to pierce through at least one side of said body and to engage said arcuate blade, a weight fastened to said locking member, and means for attaching a fish hook to said front end of said arcuate blade, said harness being attachable to a fishing line adjacent the pivotal attachment of said locking member to said arcuate blade.

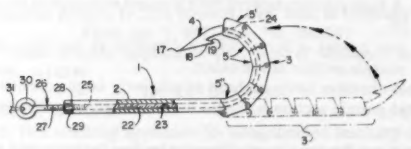
9. An improved method of fishing by trolling which comprises fixing the fish used as bait in an arcuate configuration, weighting the convex side of said fish bait, placing a fish hook adjacent the tail of said fish bait, and pulling the thus curved and weighted fish bait and fish hook through water with a fishing line attached adjacent the head of said fish bait.

4,126,957

DISPLACEABLE FISHHOOK

Richard R. Randall, 3514 Quebec St. NW., Washington, D.C. 20016

Filed Aug. 10, 1977, Ser. No. 823,420
Int. Cl.[2] A01K *83/00*
U.S. Cl. 43—43.16 **9 Claims**



1. A fishhook comprising, an elongated shank joined to a hook portion, said hook portion including a plurality of elongated segments having head and tail pivot sections, means pivotally connecting adjacent said sections of adjacent said segments to provide an articulated hook portion, said segments when extended substantially axially aligned with said shank defining a space between adjacent said segments, said segments including an axially extending bore therethrough and a cable disposed through said segment bores and affixed adjacent the forwardmost one of said segments and adjustable lock means engageable with said cable and shank to maintain said cable in a retracted position whereby, retraction of said cable displaces said segments upwardly and rearwardly from an axially aligned position to a curved position as said space between said segments is reduced until said segments abut one another at which point a rigid curved hook portion is achieved.

4,126,958

FUMIGATOR FOR MOSQUITO COIL

Yoshimasa Yokoyama, 64 Nateichiba, Naga-cho, Naga-gun, Wakayama, Japan

Filed Apr. 21, 1977, Ser. No. 789,707
Int. Cl.[2] A01M *13/00*
U.S. Cl. 43—127 **4 Claims**

1. A fumigator for a mosquito coil comprising a dish-shaped body having a bottom, a cylindrical edge defining a plane, and a body circumferential rim portion;

a lid having smoke holes therethrough and a lid circumferential rim portion;

means provided on said body rim portion and said lid rim portion for detachably coupling and hooking the same together; and

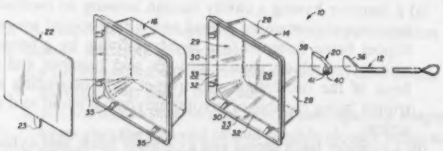
a pair of glass fiber nets, one of which is fixed in tension circumferentially to said body rim portion, the other being circumferentially fixed in tension to said lid rim portion, whereby when said body and said lid are coupled by said means the mosquito coil is held between said pair of glass fiber nets.

4,126,959

ADHESIVE-LINED INSECT CAPTURE DEVICE AND KIT

George L. Graham, 161 Venado Way, San Jose, Calif. 95123

Filed Feb. 14, 1977, Ser. No. 768,316
Int. Cl.[2] A01M *3/04*
U.S. Cl. 43—136 **8 Claims**



1. An insect capture device, comprising:

a pair of structures, each of the structures being substantially identical in size, shape and configuration, each being defined by a substantially planar base portion, and each having side walls connected to the outer margin of and

surrounding the base portion and projecting laterally therefrom forming a hollow inner space, each of the structures being of integral, molded, unitary construction and each being formed of yieldable, resilient, transparent material, each of the structures being conformable to, removably insertable and held in the inner space of the other of the structures, a first of the structures being inserted in the inner space of a second of the structures;

a layer of generally transparent, tacky, non-drying adhesive coating the surface of the inner space of the first of the structures; and

a handle angularly affixed to an outer surface of the base portion of the second of the structures.

7. An insect capture kit having component parts capable of assembly by a user, the kit comprising the combination of:

a retaining member having a base portion and wall portions projecting laterally from the base portion, the wall portions being attached to and integral with the outer margins of and surrounding the bottom portion to define a cavity therein;

an insert member receivable within the cavity of the retaining member through the open extremity of the cavity; the insert member having an exposed surface that defines an insect-receiving void bounded by a planar outer rim when so inserted in the cavity of the retaining member, the retaining and insert members each being substantially identical in size, shape and configuration, each being of integral, unitary, molded construction and each being formed of yieldable, resilient, transparent plastic material;

a tacky, non-drying, adhesive substance capable of being applied to and coating the exposed surface of the insert member;

an elongate handle formed of a generally bendable material; and

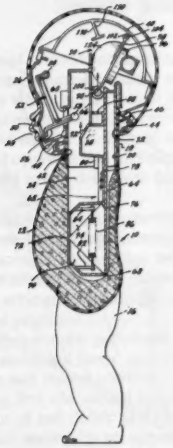
attachment means positionable between the handle and the retaining member to attach the handle thereto.

4,126,960

DOLL WITH PIVOTABLE HEAD AND PUCKERING LIPS

Benjamin G. Guerrero, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 21, 1977, Ser. No. 761,377
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—118 **12 Claims**



1. In a doll, the combination comprising:

an at least partially flexible torso having a neck opening and a generally hollow opening within said torso in communication with said neck opening;

a generally rigid tubular support member secured to said torso adjacent said neck opening;

a generally hollow head member having a flexible portion encompassing the lip portion thereof, said head member being pivotally coupled to said support member adjacent said neck opening;

a mechanism including a stationary member secured to said support member and extending into said hollow opening within said torso;

another member slidably coupled to said stationary member and having a portion extending at least partially within said head;

pressure plate means within said hollow opening interconnecting said stationary member and said slidable member for displacing said slidable member relative to said stationary member in reponse to compression of said torso;

means hingedly coupling said portion of said slidable member to the interior of said head for pivoting said head in response to displacement of said slidable member; and

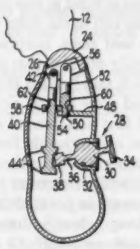
other means within said head member coacting with the interior of said head adjacent said lip portion, said other means being operable in response to displacement of said slidable member and to pivoting of said head for urging said lip portion outwardly to cause the lips to simulate a pucker.

4,126,961

ARTICULATED DOLL

Gordon A. Barlow, Evanston, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 17, 1976, Ser. No. 658,831
Int. Cl.[2] A63H *13/00*
U.S. Cl. 46—119 **3 Claims**



1. An articulated doll, comprising:

a torso portion;

a head portion;

means mounting said head portion onto said torso portion for universal movement relative thereto;

a singular manually manipulatable means at least partially exposed on the exterior of said torso portion; and

linkage means between said manually manipulatable means and said mounting means for transmitting motion thereto, said manually manipulatable means comprising a ball and socket structure on said torso portion, the ball being connected to said linkage means and having a handle fixed thereto exposed on the exterior of said torso portion for manual manipulation of the ball to transmit motion to said linkage means, wherein said linkage means includes a horizontal arm fixed to said ball for movement therewith, a vertical arm connected to said head portion, and a universal connection between said vertical arm and said horizontal arm and including guide means intermediate the ends of said vertical arm limiting the vertical arm to substantially vertical movement and means to guide the vertical arm also in a generally circular path in response to rotation of said ball, said guide means comprising a generally horizontal guide member having an aperture there-

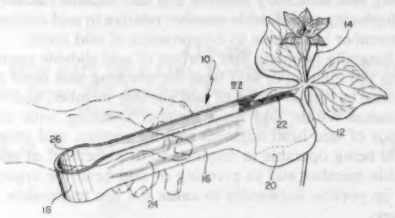
through through which said vertical arm extends for vertical guidance thereof, said horizontal guide member being pivoted about a vertical axis spaced from said aperture to effect nodding, twisting and universal movement to said head portion.

4,126,962

PLANT CARE DEVICE

Arthur B. Polcaro, 24 Marion St., West Newton, Mass. 02165

Filed Jun. 13, 1977, Ser. No. 806,170
Int. Cl.[2] A01G *1/00*; A47L *17/00*
U.S. Cl. 47—1.5 **1 Claim**



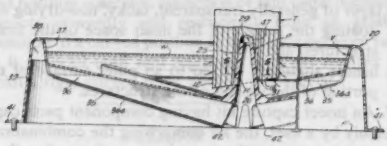
1. A device for the cleaning and application of fluids to plant leaves and the like comprising a pair of substantially flat arms connected to each other at one end thereof and normally outwardly biased from each other about said connection in an open position, each of said arms terminating at the other end thereof in an enlarged substantially flat headed portion laterally offset in one direction only, said arms being a single integral strip of relatively thin non-rigid, soft resinous plastic material having a reverse bend at that end opposite said headed portions, said opposite end in the form of an integral U-shaped connection between said arms, portions of said strip forming said connection laterally offset at that side thereof corresponding to the side at which said headed portions are offset so as to form a hand grip, said arms having respectively first and second arm edges, said first and second arm edges being essentially entirely straight and movable from a normal disposition wherein said arms assume a progressively outwardly separated generally V-shaped configuration to a closed operative position wherein said arms are in parallel disposition to each other, said arms having a longitudinally directed outwardly extending central ridge to convey a stiffness to said arms, said ridge slightly inwardly flexible when said device is in said closed operative position, said headed portions forming a continuation of said first arm edges on one side thereof and being laterally offset therefrom in the direction of said second pair of arm edges and extending laterally outwardly beyond said second arm edges on the other side thereof, said headed portions of similar configuration and disposed in opposed disposition relative to each other, each of said headed portions being relatively large and having lateral and longitudinal dimensions which are both substantially greater than the lateral extent of said arms, each headed portion further having a fluid absorbable pad attached to the inner surface thereof, said pads each of an area substantially equal to that of said headed portions and each of a thickness about one half the extent between said arms when disposed in said closed operative position, said pads closing upon one another upon movement of said arms to said closed operative position whereby a plant leaf and the like disposed between said pads is simultaneously contacted thereby on opposite upper and lower surfaces thereof, said arms being formed from relatively thin flexible material and generally longitudinally centrally disposed portions of said arms being inwardly flexible towards each other in said closed operative position and when said pads contact each other whereby soft contact of said plant leaves is provided so as to reduce the likelihood of tearing or breaking said leaves.

4,126,963

TREE STAND FOR SUPPORTING AND WATERING A LIVE TREE

Bruce A. Dunbar, Huntington Beach, Calif., assignor to Alvis Harold Dunbar, Fresno, Calif.

Filed Mar. 31, 1977, Ser. No. 783,179
Int. Cl.[2] A47G *33/12*
U.S. Cl. 47—40.5 **9 Claims**



1. An integrally formed stand made of plastic material for supporting a tree and continuously supplying water thereto, comprising:

an upwardly opening vessel having a bottom wall and a peripheral wall, and having means associated with said bottom wall for firmly supporting said vessel upon a flat surface;

the central portion of said bottom wall being pushed upward to form a hollow tapered peg whose upper end is enclosed, the circumferential outer surface of said peg not being precisely circular but having relatively raised and lowered portions, said raised portions forming longitudinally extending ridges that may engage the interior wall of a conical hole that is cut in the lower end of the tree trunk for firmly supporting the tree while said lowered surface portions of said peg provide pathways for upward flow of the water along the interior wall of the hole;

the plastic wall of the bottom end portion of said peg being thickened to provide a rigid support; and

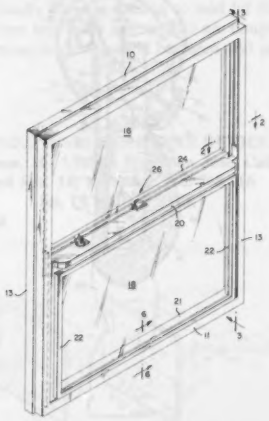
said bottom wall of said vessel having a plurality of ribs therein formed integral with said peg and extending radially outwardly therefrom for rigidly supporting the same.

4,126,964

PIVOTAL SLIDING SASH WINDOW

Ernest L. Anderson, Redmond, Wash. 98052

Filed Sep. 8, 1977, Ser. No. 831,380
Int. Cl.[2] E05D *15/22*
U.S. Cl. 49—183 **8 Claims**



1. A slidable sash window comprising a frame having a sill with an upwardly opening groove, a head and opposed jambs, the jambs joining the head and sill having glass-containing frame portions and sealing surfaces protruding inwardly in the

plane of said window, a fixed vent and a movable vent having first and second opposite ends and a track in each of said jambs for slidably guiding the movable vent, the improvement comprising:

opposite pivotal means for pivotally mounting the movable vent in said jambs, said movable vent having opposite side pieces opposed to and adapted to abut said sealing surfaces of said jambs, an inner frame piece and an outer frame piece, one of said frame pieces having an extension in the plane of said movable vent and having a reduced thickness perpendicular to said plane of said movable vent and thus spaced from said glass-containing portions of said jamb, said pivotal means each including slide means mounted in said track, weight counterbalancing means coupled to said slide means for counterbalancing the weight of the movable vent, pivot members attached to said reduced thickness extension for pivotally coupling a first of said opposite ends of the movable vent to said slide means whereby the second opposite end of the movable vent is swingable outwardly from the window frame for cleaning without interference with the jamb glass-containing portions, said movable vent being nested within said upwardly opening groove when in a lowermost position, and means for releasably locking the second opposite end against said swinging movement.

4,126,965

SUPPLEMENTAL WINDOW

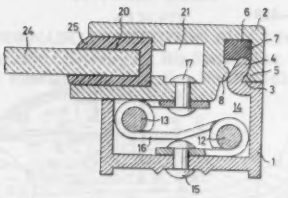
Tivadar Hoffmann, Im Biegel 24, D-7130 Mühlacker, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,286

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719374

Int. Cl.² E05D 7/00

U.S. Cl. 49—398 **10 Claims**



1. A supplemental window comprising

a mounting frame, which is adapted to be fixed on one side and is formed with a cavity which is open on the opposite side of said mounting frame, said mounting frame comprising an oblique annular peripheral sealing lip, which protrudes on said opposite side and surrounds said cavity and opposite to said cavity defines an undercut annular peripheral groove,

multi-pivot hinge means accommodated in said cavity and secured on one side to said mounting frame, and

a sash secured to said hinge means on the other side thereof and movable relative to said mounting frame to a closed position and arranged to sealingly contact said sealing lip in said closed position,

said sash having an annular peripheral channel which is open toward said mounting frame and arranged to receive said sealing lip in said closed position,

said sash having first and second lips, which are disposed on opposite sides of and define said channel and are adapted to engage said sealing lip on opposite sides thereof when said sash approaches said closed position,

said first lip being arranged to be disposed in said groove and to engage said sealing lip on one side thereof in said first position,

said second lip being arranged to engage said sealing lip on the opposite side thereof in said closed position.

4,126,966

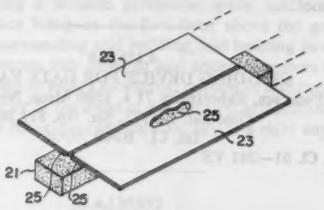
WEATHERSTRIP TAPE

Jewel M. Lobell, 12230 Hubbell, Detroit, Mich. 48227

Filed Mar. 2, 1978, Ser. No. 882,787

Int. Cl.² E06B 7/16

U.S. Cl. 49—489 **5 Claims**



1. A weatherstrip tape comprising an elongated body of resilient foam plastic material, rectangular in cross section and having a pair of opposed faces;

a pair of longitudinally extending parallel coplanar anchor strips of plastic material having inner longitudinal edge portions overlying one face of said body and secured thereto, and having outer edge portions extending laterally from opposite sides of the said body respectively;

the securing of said strips to said body including an adhesive layer interconnecting overlapping contacting surfaces of said anchor strips and body.

5. In combination, the weatherstrip tape of claim 1, a window frame having an internal channel and a window movably nested within said channel and frame;

there being a peripheral clearance space between said window and frame;

said strips folded into parallel engagement, with said outer edge portions in secured frictional projection into said clearance space;

said body snugly engaging said window and frame and bridging over said clearance space.

4,126,967

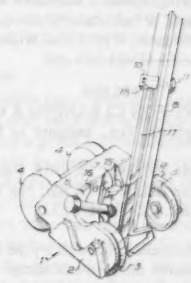
DEVICES FOR USE IN RE-SHARPENING FLUTED CUTTING TOOLS AND THE LIKE

Peter Barlow, Sheffield, England, assignor to James Neill Holdings Limited, Sheffield, England

Filed Feb. 27, 1976, Ser. No. 662,071

Int. Cl.² B24B 19/00

U.S. Cl. 51—219 R **11 Claims**



1. A device for use in re-sharpening a fluted cutting tool, comprising a body adapted to be transported over a flat, abrasive surface, said body including means for supporting the tool, means for setting the tool in a position with one front cutting edge of the tool maintained correctly exposed to said flat, abrasive surface with the cutting edge of said tool in engage-

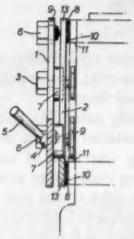
ment with said surface for re-sharpening, means for securing the tool in that position, means riding on said flat, abrasive surface for enabling said body to be transported along the surface, and means driven by said transport enabling means for oscillating a back end of the cutting tool on an arc about a point of engagement of the cutting tool with the flat, abrasive surface by oscillating one end of the body in a longitudinal direction of the tool.

4,126,968

GRINDING DEVICE FOR GATE VALVES

Jan Pedersen, Ekholtveien 71 a, 1500 Moss, Norway

Filed Jul. 1, 1977, Ser. No. 812,281
Int. Cl.[2] B24B *19/00*
U.S. Cl. 51—241 VS **6 Claims**



1. A grinding device for a gate valve which has a seat formed by an end surface of a generally cylindrical member having an interior space which is bounded by an interior surface thereof, the grinding device comprising a mounting plate, a grinding ring rotatably disposed on the mounting plate, and a plurality of fastening mechanisms secured to the plate and each having a catch member which is spaced from the mounting plate, the grinding ring being disposed between the mounting plate and the catch members, the catch members being adapted to be disposed in use within the interior space of the generally cylindrical member, and at least one of the catch members being rotatable about a predetermined axis and having a peripheral surface the distance of which from said axis increases in one angular direction about said axis, so that by rotating said one catch member in the direction opposite to said one direction when the catch members are disposed within the interior space of the generally cylindrical member the catch members can be brought into locking engagement with the interior surface of the generally cylindrical member, and the device further comprising a plurality of pressing members distributed around the circumference of the mounting plate for pressing the grinding ring towards the valve seat, each pressing member comprising a bolt having an end which faces towards the grinding ring and is provided with a rotatable ball.

4,126,969

ARRANGEMENT FOR CLEANING A CONDUIT

Garnett E. Jones, Baytown, Tex., assignor to Intra-Pipe, Inc., Baytown, Tex.

Division of Ser. No. 641,100, Dec. 15, 1975, Pat. No. 4,081,930. This application Jul. 7, 1977, Ser. No. 813,638
Int. Cl.[2] B24C *3/32*
U.S. Cl. 51—411 **1 Claim**

1. A barrier to be propelled through a pipe line under pressure by a gas and abrasive mixture including:

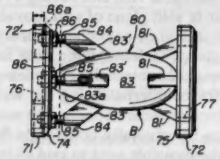
(a) spaced annular seal means for slidably and sealably engaging the interior of the pipe line;

(b) annular support means for said seal means;

(c) said annular support means having opening means therein for receiving the gas and abrasive substance entrained therein as a propellant for the barrier and for conducting the gas and abrasive mixture through the barrier,

(d) a support arrangement secured to and extending between said spaced seal means, said support arrangement including:

1. an elliptically shaped member extending along the longitudinal axis of the barrier between said spaced annular seal means;
2. means securing said annular support means adjacent each end of said elliptically shaped member; and



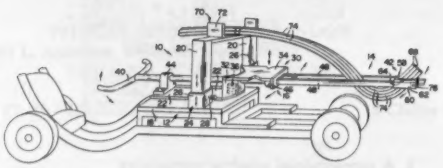
3. one of said securing means being adjustable to vary the spacing between said annular seals and to vary the position of one end of the elliptically shaped member relative to the adjacent opening in said annular support to predetermine the angle of impingment of the gas and abrasive against the pipe line for cleaning thereof and to predetermine the rate at which the gas and abrasive propells the barrier through the pipe line.

4,126,970

ABRASIVE CLEANING APPARATUS

Wayne B. Hockett, 1701 E. Sligh Ave., Tampa, Fla. 33605

Continuation-in-part of Ser. No. 614,191, Sep. 17, 1975, Pat. No. 4,027,433. This application Dec. 1, 1976, Ser. No. 746,492
Int. Cl.[2] B24C *3/06*
U.S. Cl. 51—429 **6 Claims**



1. An apparatus for cleaning surfaces by blasting them with abrasives under fluid pressure, comprising a base, a plural nozzle support to operatively support a plurality of nozzles in parallel array relative to a work surface, a plurality of conduits leading from a remote supply source of abrasive and of fluid, a rotatable interconnecting support means for said nozzle support mounted on said base, positioning means to position said plurality of nozzles with respect to the work surface; said interconnecting support means including a support plate rotatably mounted on said base whereby said interconnecting support is rotatable in a horizontal plane, said plural nozzle support being supported on said support plate and comprising at least one support member fixedly attached to a rotatable support shaft, a yoke extending rearwardly from said support shaft for rotation of said support shaft and a nozzle holder attached to the forward end of said support member, said nozzle holder comprising a nozzle collar having a plurality of apertures therein for said plurality of nozzles, whereby rotation of said support shaft directs the opposing horizontal force vector of said plurality of nozzles during operation thereof to cause horizontal rotation of said interconnecting support, the degree of force of rotation of said support being adjustable by varying the angle of the plurality of nozzles.

4,126,971

FIXTURE HANGING ASSEMBLY

Henry J. Macuga, and Bernard F. Deschamps, both of Ware, Mass., assignors to Eclipse Mfg. Inc., Ware, Mass.

Continuation-in-part of Ser. No. 715,822, Aug. 19, 1976, which is a continuation-in-part of Ser. No. 455,575, Mar. 28, 1974, abandoned. This application Apr. 21, 1977, Ser. No. 789,710

Int. Cl.[2] E04F *19/00*

U.S. Cl. 52—28 **15 Claims**

1. In combination with an open work grid type suspended ceiling frame construction incorporating ceiling blocks supported by pairs of spaced interconnected inverted T-bars, a fixture hanging support for bridging the space between a pair of adjacent T-bars and including:

(i) at least two elongated flat hanger straps each having free opposite distal end portions;

(ii) at least three clips or mounts each engageable with one of the distal end portions of the hanger strap and having a downwardly depending T-bar engaging portion comprising a trio of spaced resilient legs with the pair of outside legs being embraceable with one side of the T-bar and the intermediate leg being embraceable with the opposite side of the T-bar, the outside and inside legs terminating at the same distance below the top of the T-bar, having a first horizontally extending component in communication with said trio of legs and a second horizontally extending component in communication with said first horizontally extending component, said first and second horizontally extending components each provided with at least one open-ended pocket adapted to receive a free distal end of said hanger strap.

4,126,972

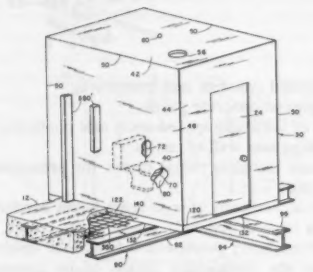
TORNADO PROTECTION BUILDING

Almer Silen, 2510 Cheyenne St., Big Spring, Tex. 79720

Filed Jun. 28, 1976, Ser. No. 700,163

Int. Cl.[2] E04H *9/14*

U.S. Cl. 52—34 **12 Claims**



1. A tornado protection building comprising an enclosure having a top and four side walls, each of said walls having an imaginary outer plane touching outermost portions of the respective side wall and another imaginary inner plane touching innermost portions of the same respective side wall, said inner and outer planes being at least one inch in thickness so as to provide each respective wall with substantial resistance to forces that might be exerted onto each wall in all directions by a tornado whereby the resistance of each said wall to forces in all directions on it is in substantially all parts of said wall, each of said side walls being adjacent two others of said side walls and said top wall having edges respectively adjacent each of said side walls, means securing said walls of said enclosure each to said respective adjacent walls of said enclosures to give said enclosure rigidity, anchor members attached to lower ends of said sidewalls, said building having a plurality of rooms, said tornado protection enclosure being attached to said building in a manner such that said protection enclosure extends across the top and sides of a space occupied by at least one of said rooms and less than all of the rooms of said building thereby defining a tornado protection space, said tornado protection space being on the first floor above the general ground level surrounding said building, said building having a horizontal concrete slab under it, said anchor members being disposed beneath at least a substantial portion of said concrete slab, the majority of the areas of at least two adjacent ones of said side walls being disposed substantially at a right angle to each other.

4,126,973

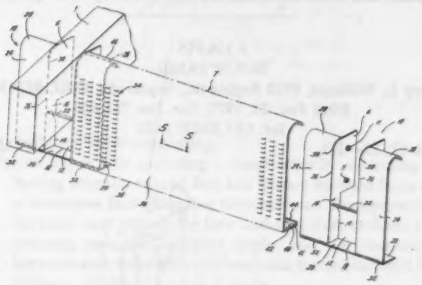
RAFTER VENT

William A. Luckey, P.O. Box 31275, El Paso, Tex. 79931

Division of Ser. No. 589,356, Jun. 23, 1975, Pat. No. 4,007,672. This application May 17, 1976, Ser. No. 687,409

Int. Cl.[2] F24F *7/00;* **E04B** *7/02*

U.S. Cl. 52—91 **8 Claims**



2. A rafter connector for engagement to building rafters having sides, comprising:

a resilient tongue having a width at least as wide as such rafter; and

connecting means for attachment to such sides of such rafter;

locking means for engaging other structures; and

wherein said resilient tongue includes two sides, said connector means is located on each of said sides and said locking means is provided on each of said sides.

4,126,974

EXPANDABLE BEAM STRUCTURE

Gary L. Hardin, 4636 York Ave., S. Minneapolis, Minn. 55410

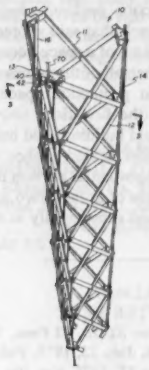
Filed Nov. 17, 1977, Ser. No. 852,491

Int. Cl.[2] E04H *12/18*

U.S. Cl. 52—109 **9 Claims**

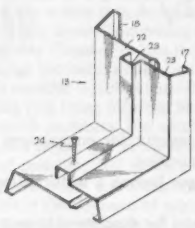
1. An expandable beam structure comprising, a three-sided beam structure with each side being formed of pairs of scissor links each having a given length dimension and pivotally connected end-to-end to form the side, connecting side surface means formed intermediate each side of said beam structure, said connecting side surface means each being formed of a plurality of pairs of scissor links pivotally connected end-to-end with the links having a shorter length dimension than the links forming the three sides of the beam structure, block means pivotally connecting the ends of the links of the main sides with the links of the side surface means and means included in part in said last named means for maintaining said beam structure in an expanded position, said links forming the sides and the connecting side surface means of the beam structure being constructed to form a six-sided structure in a collapsed position, said means included in part in said last named

means being notches in the respective blocks permitting the blocks to fit together and apertures through the blocks to



permit pins to be threaded therethrough to hold the blocks together and hence the beam structure in an expanded position.

4,126,975
DOOR JAMB
Larry L. Williams, 8745 Sophia St., Sepulveda, Calif. 91343
Filed Jan. 21, 1977, Ser. No. 761,546
Int. Cl.[2] E06B *1/20*
U.S. Cl. 52—211 **1 Claim**



1. A metal jamb construction for securement onto a frame having frame surfaces defining an opening through a wall in a building, comprising the combination of:

a first piece having a clamping portion engageable with one side of said frame and a joining section extending into said opening from said one side generally parallel to said frame surfaces, said joining section terminating in a semicircular bead, the concave side of which faces said frame surfaces;

a second piece having a clamping portion engageable with the other side of said frame and a joining section extending into said opening from said other side and having a main portion generally parallel to said frame surfaces and so positioned that said joining section of said first piece lies between said joining section of said second piece and said frame surfaces, said joining section of said second piece including a box-like portion formed of a first wall portion extending perpendicularly from said main portion into said opening, a second wall portion extending from said first wall portion parallel to said main portion and a third wall portion extending from said second wall portion parallel to said first wall portion back to said joining section of said first piece with the end of said third wall portion abutting against said joining section of said first piece;

said joining sections constituting compression loaded, spring biasing means for forcibly urging said clamping portions into secure engagement with said frame;

said biasing means including a fastener means engageable between said joining sections placing a compressive load therebetween and including said box-like portion of said joining section of said second piece and said semi-circular bead carried on said first piece;

said fastener means being a screw operably passing through said second wall portion of said box-like portion into said joining section of said first piece, whereby pressure points are established on said joining section of said first piece where contacted by a corner formed by said first wall portion and said main portion and said abutting end of said third wall portion;

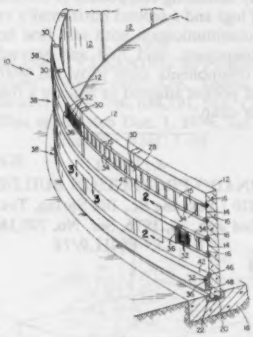
a selected one of said pieces including shaped depressions to receive a hinge;

said clamping portions including outwardly depending legs having inwardly and opposing foot elements engageable with said frame;

the opposite sides of said frame including a groove to insertably receive a guide said associated and respective foot element; and

said box-like portion constituting a spacer and a cap covering said box-like portion in snap lock relationship therewith.

4,126,976
CONCRETE TANK
Francis X. Crowley, 24 Lanark Rd., Wellesley, Mass. 02181
Filed Dec. 22, 1977, Ser. No. 863,082
Int. Cl.[2] E04H *7/20, 12/16*
U.S. Cl. 52—224 **13 Claims**



1. A prestressed concrete tank comprising:

a wall of precast concrete panels,

a plurality of vertically spaced-apart cast continuous beams surrounding said wall of panels,

said beams including metal means for prestressing said wall, and

a plurality of vertically spaced-apart liquid barriers corresponding to said vertically spaced-apart beams, each of said barriers being positioned between the inside of said tank and the prestressing means of its corresponding beam.

4,126,977
CONTOUR OF LOG CABIN LOGS FOR OPTIMUM SEAL
Finis L. Chisum, P.O. Box 1145, Claremore, Okla. 74017
Continuation-in-part of Ser. No. 678,238, Sep. 13, 1977, Pat. No. 4,047,350. This application Aug. 8, 1977, Ser. No. 822,801
Int. Cl.[2] E04C *1/10;* **E04B** *1/10*
U.S. Cl. 52—233 **10 Claims**

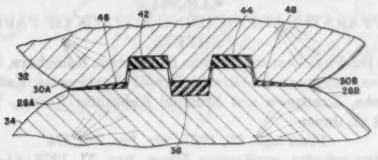
1. In a log for a log cabin, having a generally circular cross-section with upper and lower parallel flattened surfaces along the longitudinal length of said log, and having at least one tongue member extending upwardly from said upper surface, and having at least one groove member, substantially the re-

verse image of said at least one tongue member, extending inwardly and upwardly into said lower surface, the lateral portions of said first and second surfaces extending outwardly from said tongue members and said groove members to the outer circular portion of said log, defined as shelf members, the intersection of said shelf members with said circular portions defined as lips;

the improvement comprising;

(a) a first of said surfaces serving as said upper surface of said log, and the second of said surfaces serving as said lower surface of said log;

(b) the first shelf members of said first surface sloping outwardly and downwardly from the horizontal, by a selected small angle A from the outer walls of said tongues to the first lips of said first shelf members;



(c) the second shelf members of said second surface sloping outwardly and downwardly from the horizontal by a selected small angle B, where B is greater than A, to the second lips of said second shelf members;

whereby when said logs are positioned with their second surfaces on top of the first surfaces of the lower adjacent log, said tongues and grooves will mesh, and the logs will be supported at the contact of said first and second lips; and wherein

any moisture that may be blown into the space between said first and second shelf members will be blocked by the walls of said tongues, and can migrate outwardly due to the slope of said upper shelf members.

4,126,978

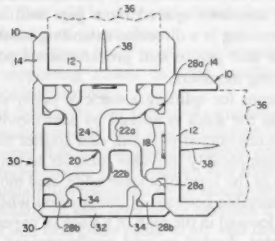
APPARATUS FOR INTERCONNECTING PANELS

Stephen M. Heller, 2300 Bridgeway, Sausalito, Calif. 94965

Filed Dec. 27, 1977, Ser. No. 864,310

Int. Cl.[2] E04C *2/30*

U.S. Cl. 52—461 **9 Claims**



1. Apparatus for interconnecting panels comprising:

a plurality of elongate panel edge members having one side adapted for attachment to respective edges of the panels, and an opposite side including a pair of parallel tongues extending outwardly from the member in a direction away from the panel edge along substantially the entire length of the member;

a plurality of elongate core elements, each core element adapted to be positioned generally parallel to adjacent members attached to panel edges, each core element having a pair of longitudinally extending arms crossing at substantially the axial center of the core element, each arm including a reversably bent portion on each side of the axial center of the core element so that the arms are both radially and tangentially resilient, the distance between adjacent arm ends substantially corresponding to the distance between the tongues of the members; and

means at the ends of each arm for establishing a fitting connection with a tongue so that each pair of adjacent arm ends can releasably grasp the tongues of a member attached to a panel edge whereby a plurality of panels can be interconnected.

4,126,979

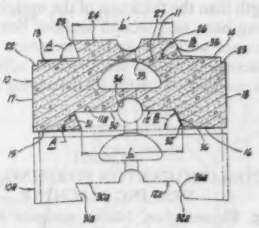
INTERLOCKING BUILDING BLOCK

Norman L. Hancock, 10439 Garibaldi St., St. Louis, Mo. 63122

Filed Aug. 4, 1977, Ser. No. 821,753

Int. Cl.[2] E04B *2/56*; E04C *1/04*

U.S. Cl. 52—594 **3 Claims**



1. building block comprising:

(a) an upper side including a longitudinally extending rib having laterally spaced first and second inclined faces and a transverse face extending therebetween, the intersection between said transverse face and said first inclined face defining an acute included angle, and the intersection between said transverse face and said second inclined face defining an obtuse included angle,

(b) a lower side including a longitudinally extending groove having laterally spaced first and second inclined faces and a transverse face extending therebetween, the intersection between said transverse face and said first inclined face defining an acute included angle, and the intersection between said transverse face and said second inclined face defining an obtuse included angle, said groove receiving the rib of a compatible block in interfitting relation as the first inclined faces of the rib and groove are placed together and the uppermost block is swung downwardly on the compatible block,

(c) said second inclined faces of the rib and groove having stepped shoulders, the stepped shoulder of the said second groove face engaging the stepped shoulder of the said second rib face of a compatible block to preclude relative movement of the said second inclined faces tending to separate the interfitted rib and groove when lateral forces are applied to the side of the interconnected blocks on which the stepped shoulders are located, and

(d) opposed front and rear sides and opposed ends.

4,126,980

METAL GRATING

Jack Parsons, Malton, England, assignor to Norton Engineering Alloys Company Limited, Malton, England

Filed Jun. 17, 1977, Ser. No. 807,599

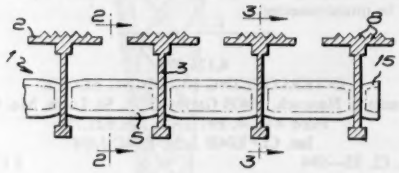
Claims priority, application United Kingdom, Jun. 19, 1976, 25525/76

Int. Cl.[2] E04B *2/42*

U.S. Cl. 52—669 **8 Claims**

1. A metal floor grating comprising a number of parallel load carrying bars interconnected by a number of crossbars, the load carrying bars each having at least one upright member and at least one upper flange, a number of holes in said upright

member through which the crossbars extend, the crossbars being mechanically deformed between the load carrying bars to provide first sections located between the upright sections of adjacent load carrying bars and having at least one dimension greater than the corresponding dimension of the holes, and second sections extending through the holes and being of



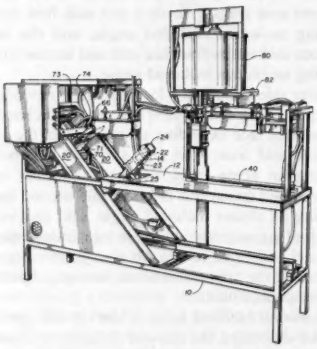
greater length than the thickness of the upright members of the load carrying bars, said second sections being expanded into intimate contact with the upright members within the holes and being increased in cross-sectional size adjacent each side of the holes to positively lock the load carrying bars to the crossbars.

4,126,981

SEMI-AUTOMATIC CARTON FORMING, FILLING, AND SEALING MACHINE

Percy King, Bloomington, Minn., assignor to FBM International, Inc., Minneapolis, Minn.

Filed Aug. 31, 1977, Ser. No. 829,283
Int. Cl.[2] B65B *3/02, 43/26, 67/00*
U.S. Cl. 53—565 **4 Claims**



1. A machine for filling and sealing a tubular carton blank, comprising:

(a) a frame structure;

(b) a first member pivotally mounted on said frame structure including a mandrel mounted on one end of said first member, said mandrel being constructed and arranged to receive a knocked-down carton blank and also including drive means connected thereto for rotating said first member in one direction from an initial position to an intermediate position and a further position and in another direction back to said initial position;

(c) a second member mounted on said frame for reciprocating translational movement along said frame including support means for holding a carton with a sealed bottom portion and an open top portion, said second member being coupled to a link coupled to said first member for movement from an initial position where the carton is filled with liquid to an intermediate and a further position, and back to said initial position in synchronism with said first member;

(d) first and second heating means mounted on said frame adjacent said intermediate positions of said first and second members respectively for heating the respective bottom and top portions respectively of cartons carried by said first and second members between said initial and said further position;

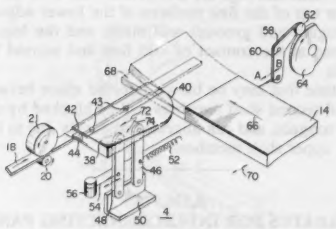
(e) first and second pressure applying means mounted on said frame in alignment with said further positions of said first and second members respectively including pressure means for applying pressure and heat for a predetermined period of time to seal the heated respective bottom and top portions of said carton.

4,126,982

APPARATUS FOR BINDING A STACK OF PAPER SHEETS

Yukio Ito, Fujisawa, and Susumu Morishima, Kamakura, both of Japan, assignors to Hitachi Denshi Engineering Kabushiki Kaisha, Kanagawa and Musashi Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 20, 1977, Ser. No. 789,274
Claims priority, application Japan, Apr. 27, 1976, 51-47208; Apr. 17, 1976, 51-47212
Int. Cl.[2] B65B *13/04, 27/08*
U.S. Cl. 53—593 **5 Claims**



1. An apparatus for use in a machine for binding a stack of paper sheets moved thereinto, said apparatus comprising:

means for supporting a stack of paper sheets to be bound at a predetermined position, said supporting means comprising first and second fixedly positioned immovable supporting members spaced by a gap, said stack of paper sheets moving in a direction extending substantially transverse of said gap to said predetermined position on said supporting members;

splitter means for splitting a stack of paper sheets into two layers as the stack is moved by said moving means into said predetermined position, said splitter means comprising a reciprocably movable member having a peripheral portion in the form of a knife edge, said movable member being movable between a first position whereat said knife edge is located in the path of a stack of paper sheets during movement thereof to said predetermined position such that said knife edge penetrates into the stack of paper sheets to split the stack into two layers, and a second position whereat said knife edge is spaced from said path;

guide means, integral with said movable member, for guiding a leading end portion of a binder tape to a position between the two layers of paper sheets when said movable member is in said first position thereof, said guide means comprising a pair of parallel plates attached to said movable member;

means for clamping the two layers of paper sheets together, with said leading end portion of a binder tape pressed therebetween, against said supporting means; and

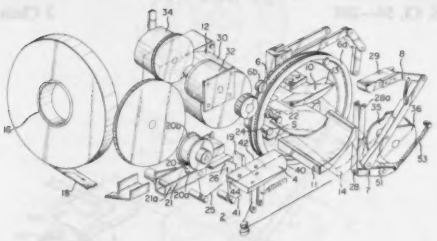
means for winding said binder tape around the thus clamped stack of paper sheets.

4,126,983

BINDING TAPE DEALING APPARATUS FOR PAPER BUNDLE BINDING APPARATUS

Yukio Ito, Fujisawa, and Susumu Morishima, Kamakura, both of Japan, assignors to Hitachi Denshi Engineering Kabushiki Kaisha, Kanagawa and Musashi Kabushiki Kaisha, Tokyo, both of, Japan

Filed Apr. 20, 1977, Ser. No. 789,279
Claims priority, application Japan, Apr. 27, 1976, 51-47209
Int. Cl.[2] B65B *13/04, 27/08*
U.S. Cl. 53—593 **5 Claims**



1. An apparatus for dispensing a binding tape and for wrapping the binder tape around a bundle of stacked paper sheets, thereby binding the bundle, said apparatus comprising:

stationary supporting means for supporting a bundle of paper sheets at a binding position, said supporting means including a pair of supporting members separated by a gap, such that a bundle of paper sheets rests on said pair of supporting members and spans said gap;

divider means including an integral knife edge portion for dividing the bundle of paper sheets into two separate layers, said divider means being movable between an inoperative position spaced from the bundle of paper sheets supported on said supportinng means and an operative position whereat said knife edge portion extends into the bundle of paper sheets, said divider means having integrally and fixedly attached thereto tape guide means;

tape feed means for feeding a binding tape along a tape feeding path to said tape guide means when said divider means is in said operative position thereof, and for feeding the leading end of said tape into the space between the two separate layers of the bundle of paper sheets, whereafter said divider means moves to said inoperative position thereof, such that said leading end of said tape is inserted within the bundle of paper sheets;

a rotatable annular flyer body positioned to surround said stationary supporting means and the bundle of paper sheets supported thereon;

means, on said flyer body, for selectively grasping said tape after said leading end of said tape is inserted within said bundle of paper sheets, said grasping means comprising a first guide roller fixedly positioned on said flyer body and a second guide roller mounted to be selectively movable circumferentially of said flyer body between a first position toward said first guide roller to nip said tape between said first and second guide rollers and a second position spaced from said first guide roller, said divider and tape guide extending in their operative position between said guide rollers in their second position to guide said tape between said rollers;

means for rotating said flyer body, while said tape is nipped between said first and second guide rollers, and for thereby wrapping said tape around the bundle of paper sheets through said gap in said supporting means a predetermined number of times;

cutter means for cutting said tape at a position between said tape feed means and said flyer body;

first spring and cam means for causing said cutter means to cut said tape after said tape has been wrapped said predetermined number of times around the bundle of paper sheets, after which time said second guide roller moves to said second position thereof;

pivotally mounted pressing lever means for pressing a portion of said tape adjacent the free cut end thereof against a lateral side of the bundle of paper sheets, to thereby prevent said tape from becoming loosened; and

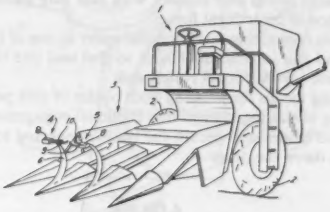
second spring and cam means for controlling pivotal movement of said pressing lever means.

4,126,984

APPARATUS FOR THE AUTOMATIC LATERAL GUIDANCE OF AGRICULTURAL MACHINES

Josef Gail, Unterwittelsbach, Germany, assignor to Maschinenfabrik Fahr AG Gottmadingen, Gottmadingen, Germany

Filed Dec. 7, 1976, Ser. No. 748,220
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1975, 2555283
Int. Cl.[2] A01D *75/28*
U.S. Cl. 56—10.2 **6 Claims**



1. In an automatic lateral guide system for an agricultural machine wherein a sensor responds to standing crop material at the cutting head of the machine to control the path thereof and cause the machine to travel along a guideline formed by the crop material, the improvement wherein:

said sensor comprises a swingable arm mounted at one end on said head and having a free extremity engageable with said crop material;

a potentiometer connected to said arm to control a magnetic valve controlling the steering of the machine;

an elongated crop deflector fixed on said head substantially at the level of said arm and having a free end terminating short of the free end of said arm rearwardly thereof;

said arm and said deflector being disposed on a common support and reach away therefrom in generally the same direction; and

said deflector is disposed behind said arm in an undeflected rest position thereof relative to the direction of travel of said machine and includes an acute angle with said arm in said rest position thereof, the arm being deflectable without interference by said deflector by stalks along said line, said deflector preventing full deflection of said arm by plant parts out of said line by urging the plant parts toward the line.

4,126,985

LAWN MOWER

Katsuhiko Takahashi, Tokorozawa, and Hachiro Doi, Kamifukuoka, both of Japan, assignors to Fuso Keigokin Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 610,222, Sep. 4, 1975, Pat. No. 4,027,463. This application Feb. 24, 1977, Ser. No. 771,567
Claims priority, application Japan, Jul. 31, 1976, 51-91802
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.[2] A01D *55/26*
U.S. Cl. 56—13.6 **4 Claims**

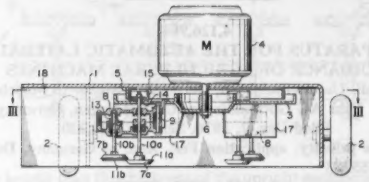
1. A lawn mower comprising:

a frame with means to support said frame on the ground,

a motor driven rotary disc supported by and disposed within said frame,

a pair of coacting blades carried by said rotary disc,

frictional means for driving said blades under the influence of centrifugal force, comprising a stationary ring carried by said frame, and a frictional roller mounted upon said disc and being capable of pivotal movement relative to said disc so that when said disc rotates, said frictional



roller pivots into contact with said ring under the influence of centrifugal force,

means connecting said frictional roller to one of the blades of said pair of coacting blades so that said one blade rotates with said frictional roller, and

biasing means for pressing both blades of said pair of coacting blades together so that frictional engagement between said blades will permit the blade connected to said roller to drive the other.

4,126,986

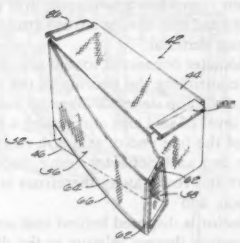
GRASS COLLECTION BAG FOR ROTARY LAWN MOWER

Earl H. Kidd, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 19, 1976, Ser. No. 743,352

Int. Cl.[2] A01D *35/22*

U.S. Cl. 56—202 **10 Claims**



1. A rotary lawn mower comprising a blade housing having a rear portion, a top deck, and, at one side thereof, a discharge outlet, a handle connected to the rear portion of said housing and extending upwardly and rearwardly therefrom for guiding movement of said mower, a cutter blade mounted for rotary movement inside said housing for cutting grass and for delivering a stream of air with entrained grass clippings through said discharge outlet, a bag of flexible material disposed principally rearwardly of said blade housing and including front, rear, upper, bottom, and opposed side walls defining an interior for collecting grass clippings, said collection bag including a sleeve of air impervious material extending integrally from the one of said side walls disposed on the same side of said housing as said discharge outlet and terminating in a mouth which is connected in communication with said discharge outlet, said sleeve having convexly curved outer wall portion extending from said mouth toward said rear wall and a bottom wall portion integrally connecting said sleeve outer wall portion with said one side wall and extending in a longitudinal direction upwardly and rearwardly from said mouth toward said rear wall such that grass clippings being delivered through said discharge outlet are guided upwardly and rearwardly into the interior of said collection bag and in a direction generally towards the other of said side walls, and means for supporting said collection bag from said handle and from said housing.

4,126,987

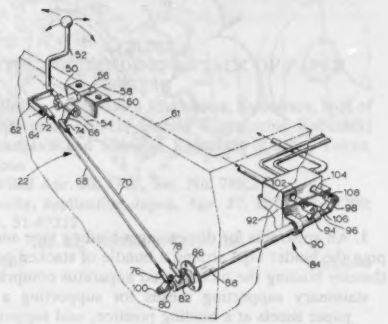
MANUAL LINKAGE

David D. Sarich, P.O. Box 644, Davidson, Canada

Filed Aug. 25, 1977, Ser. No. 827,764

Int. Cl.[2] A01D *67/00*

U.S. Cl. 56—208 **3 Claims**



1. A control linkage suitable for use on a swather having a table, a reel, and a control mechanism operable to adjust both the reel and the table vertically, the control linkage comprising:

a housing;

a hand lever pivotally coupled to the housing for angular movement about a first axis;

means adapted to pivotally mount the housing on the swather for manual operation by the operator and for movement about a second axis perpendicular to the first axis;

the hand lever including a bracket having an attachment portion spaced transversely of the first axis in a direction lying generally along the second axis;

a crank attached to the housing and extending outwardly for arcuate movement when the hand lever is moved about the second axis;

first and second control rods;

attachments coupling the first and second control rods respectively to the attachment portion and to the crank, the other ends of the control rods being attachable to the control mechanism so that movement of the hand lever about the first and second axis will move the control rods and thereby cause the control mechanism to maintain the table and the reel at selected heights and in a selected vertical relationship with respect to one another.

4,126,988

MOWING DEVICE

Pieter A. Oosterling, and Hendricus C. van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Oct. 5, 1976, Ser. No. 729,828

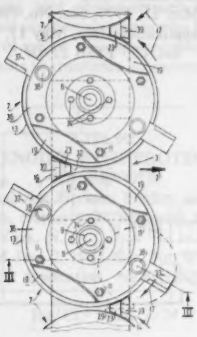
Claims priority, application Netherlands, Oct. 10, 1975, 7511969

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **10 Claims**

1. A mowing device comprising a housing extending transversely of the direction of movement of the mowing device, a plurality of cutting members rotatably journalled on the housing and driving gear means accommodated in said housing for

driving adjacent pairs of cutting members in relatively opposite directions, each cutting member comprising at least one disc skimming the top of the housing, at least one cutter fastened to the periphery or the top side of the disc, the discs of each pair being spaced to expose the top of the housing therebetween whereby each pair of discs and the exposed housing



therebetween define a channel which comprises a first portion converging rearwardly from the front edge of the housing and a second portion diverging rearwardly to the rear edge of the housing, and filling means on said housing between each pair of cutting members and extending rearwardly from the front edge of the housing for substantially filling each said first portion of a channel.

4,126,989

MOWING IMPLEMENT

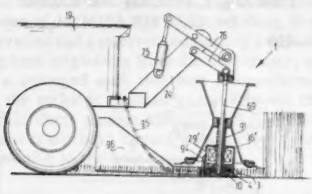
Pieter A. Oosterling, and Hendricus C. van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 794,188, May 3, 1977, which is a continuation of Ser. No. 733,064, Oct. 18, 1976, abandoned, which is a continuation of Ser. No. 579,551, May 21, 1975, abandoned. This application Dec. 1, 1977, Ser. No. 856,590

Claims priority, application Netherlands, May 31, 1974, 7407454

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **8 Claims**



1. A mowing implement to be attached to a vehicle, comprising a housing extending substantially at right angles to the direction of travel of the vehicle, at least one set of two cutter members rotatably journalled on said housing and arranged above said housing and adapted to rotate in opposite directions and a driving gear means arranged inside the housing and driven via coupling means from a driving means actuated by the vehicle and coupling the cutter members with one another without slip, each of said cutter members having a cutter support and at least one cutter secured to the periphery of the cutter support, while the cutters of the two cutter members are relatively arranged in off-set fashion and the cutter paths of the two cutter members overlap one another, characterized in that a motor is arranged beneath the cutter support of at least one of the cutter members, said motor communicating through a duct system with the driving means arranged on the vehicle to produce energy like an aggregate, each driving shaft of the motor being hollow and the housing being suspended from the vehicle by means of a supporting bar extending through the hollow shaft.

4,126,990

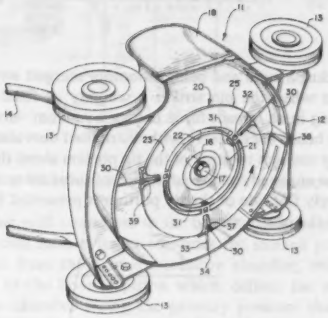
CUTTER DISC ASSEMBLY FOR ROTARY LAWN MOWER

Gerald C. Fisher, and Joseph E. Scanland, both of Savannah, Ga., assignors to Roper Corporation, Kankakee, Ill.

Filed Aug. 18, 1976, Ser. No. 714,982

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **29 Claims**



1. A cutter disc assembly for a rotary lawn mower comprising, in combination, a disc-shaped body including a circular central portion and a peripheral portion, the central portion having a rotary drive connection, pin anchoring means adjacent the junction between the central portion and the peripheral portion providing a radially extending opening angled downwardly at a shallow angle, a cutter pin formed of durable plastic having a head and a shank and terminating in a stiffly resilient tip portion, the pin being mounted cantilever fashion downwardly angled in the opening with the head adjacent thereto so that the tip portion projects radially beyond and below the periphery of the disc, a backstop on the peripheral portion of the disc arranged in the path of bending movement of the shank portion of the pin and against which the pin bends as the projecting tip portion of the pin strikes an obstruction thereby to reduce concentration of stress in the shank portion of the pin, and a substantially horizontal bridge closely overlying the pin at the periphery of the disc for the purpose of holding the pin in downwardly angled working position notwithstanding the elevating effect of centrifugal force and for providing frictional damping as the pin bends back and forth below the bridge.

4,126,991

CUTTER PIN FOR ROTARY MOWER HAVING LENTICULAR SECTION

Donald L. Gobin, and Joseph E. Scanland, both of Savannah, Ga., assignors to Roper Corporation, Kankakee, Ill.

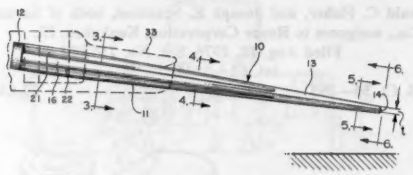
Filed Aug. 1, 1977, Ser. No. 820,291

Int. Cl.[2] A01D *55/18*

U.S. Cl. 56—295 **10 Claims**

1. A cutter pin for use with a rotary mower employing a mower disc having a keyed radial socket inwardly of the periphery thereof compromising, in combination, a head, a shank, and a tip portion so dimensioned that when the shank is secured in the socket adjacent the head the tip portion extends beyond the periphery, the tip portion being only a fraction of the thickness of the shank in the vertical plane and having approximately the same width as the shank in the horizontal plane with the result that the tip portion is flattened and blade-

like with generally parallel lateral edges, the pin being formed integrally of durable plastic having substantially the characteristics of nylon so that it stands out from the periphery in radially self-supporting position with sufficient stiffness for the cutting of grass as the disc rotates, the tip portion being of lenticular cross section having sharpened edges facing in opposite directions, the tip portion having a sufficiently high width-



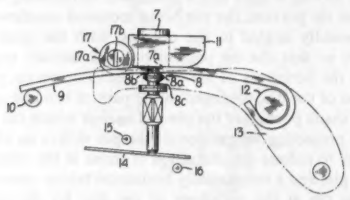
to-thickness ratio and being smoothly merged with the shank so that when the pin strikes a weighty or fixed obstruction resulting in an impact force having a random vertical component it bends backwardly with distributed curvature accompanied by resilient twisting of the tip portion about the pin axis so that the engaged cutting edge thereof turns away and so that a relatively flat side of the tip portion is presented for idly wiping-by the obstruction.

4,126,992

STEM MECHANISM FOR A WATCH

Kazumasa Yasuda, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Dec. 22, 1975, Ser. No. 643,174
Claims priority, application Japan, Dec. 26, 1974, 50-1005
Int. Cl.[2] G04B *37/00*
U.S. Cl. 58—88 B **3 Claims**



1. A winding stem mechanism comprising, in combination:

a winding shaft having a detent portion comprised of a pair of annular peripheral recesses with an annular step portion therebetween, and a pair of annular stops each adjacent a respective one of said recesses;

a resilient spring-like member normally engaged with a first of said recesses to define a normal position of said shaft; and

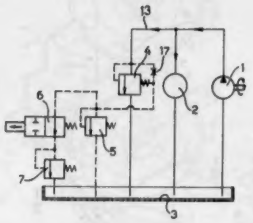
mounting means mounting said shaft for rotation and for being axially slidable, wherein axial travel of said shaft in a first axial direction is effective to cause said spring-like member to climb said annular step portion and engage the second of said recesses and the annular stop adjacent thereto to define a first operating position of said shaft, and wherein axial travel of said shaft in a second axial direction is effective to push the annular stop adjacent said first recess to flex said spring-like member to permit said shaft to travel to a second operating position and flex in a direction effective to bias said shaft in said first axial direction back from said second operating position to said normal position when said shaft is released.

4,126,993

HYDRAULIC SYSTEM FOR AN EARTH-MOVING MACHINE AND A TEMPERATURE-CONTROLLED VALVE FOR A HYDRAULIC SYSTEM

Giorgio Grattapaglia, Turin, and Rino Barbagli, Borgaretto (Turin), both of Italy, assignors to Fiat-Allis Macchine Movimento Terra, S.p.A, Lecce, Italy

Filed May 13, 1977, Ser. No. 796,667
Claims priority, application Italy, May 17, 1976, 68201 A/76
Int. Cl.[2] F15B *21/04*
U.S. Cl. 60—329 **8 Claims**



1. An automatically controlled hydraulic system for use throughout varied environmental conditions comprising

a hydraulic pump for creating a pressurized supply of hydraulic fluid for communication to hydraulic actuators,

hydraulic actuators coupled to said hydraulic pump for actuation in response to the pressurized hydraulic fluid supplied thereto and

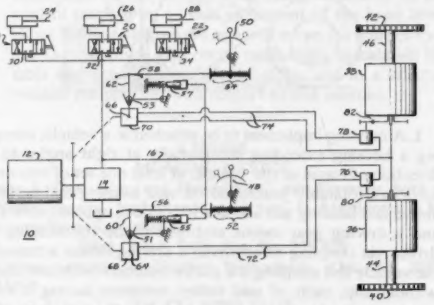
normally open temperature-responsive valve means coupled with said hydraulic pump and said hydraulic actuators to by-pass pressurized hydraulic fluid communication between said hydraulic pump and said hydraulic actuators, and actuable to a closed position to effect pressurized hydraulic fluid communication therebetween in response to the temperature of the pressurized hydraulic fluid increasing to a predetermined temperature above that temperature at which said valve means is normally open.

4,126,994

FLUID MOTOR AND CONTROL

Harvey M. Rockwell, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Aug. 1, 1977, Ser. No. 820,550
Int. Cl.[2] F15B *11/16*
U.S. Cl. 60—420 **26 Claims**



1. A hydraulic drive and control system comprising, in combination, a hydraulic drive motor including a driven member, a hydraulic circuit including means for supplying fluid under pressure to said motor, adjustably positionable output control means associated with said motor for varying the

output torque and rotational speed of said driven member, said hydraulic system being characterized in that the pressure therein will vary at least slightly in relation to variations in resistance to movement of said driven member, means for positioning said output control within a predetermined range of positions so as to enable an operator to vary said motor torque and rotational speed within a predetermined range, and means responsive to changes in pressure within said hydraulic circuit for varying said predetermined range of positions through which said positioning means may be moved, whereby said output control means is at least occasionally, in use, controlled by variations in resistance to movement of said driven member.

4,126,995

HOT-GAS ENGINE WITH PROTECTED HEAT RESERVOIR

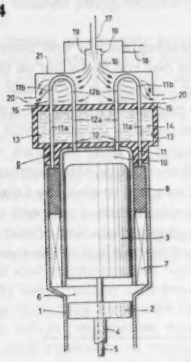
George A. A. Asselman; Herman Fokker, and Roelf J. Meijer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 2, 1977, Ser. No. 802,906

Claims priority, application Netherlands, Jun. 11, 1976, 7606301

Int. Cl.[2] F02G *1/04*

U.S. Cl. 60—524 **9 Claims**



1. A hot-gas engine comprising a closed working space in which a working medium performs a thermodynamic cycle during operation, and heater means for supplying heat from a heat source to the working medium, the heater means including a number of ducts through which working medium flows during operation and a reservoir containing a meltable material for storing heat originating from the heat source, wherein the reservoir is arranged such that heat is transferred from the source to the meltable material exclusively via the working medium, said ducts passing through the reservoir, and said heater means comprising thermal insulation for insulating the reservoir relative to the heat source.

4,126,996

HYDRAULIC BRAKE BOOSTER FOR A VEHICULAR BRAKE SYSTEM

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

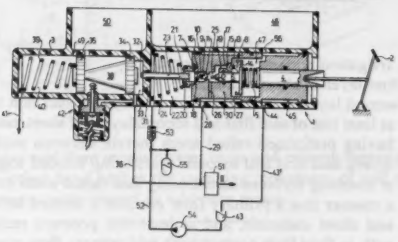
Filed Feb. 18, 1977, Ser. No. 770,135

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607140

Int. Cl.[2] B60T *13/00*

U.S. Cl. 60—547 R **2 Claims**

1. In a hydraulic brake booster for a vehicular brake system, the system having a brake pedal actuator and a front and rear brake circuit connected to the brake booster, the brake booster comprising: a booster cylinder; a booster piston within the booster cylinder defining a storage pressure chamber, a control pressure chamber and a relief chamber; a control valve means which controls the interconnection of the storage pressure chamber with the control pressure chamber and the control pressure chamber with the relief chamber; a travel limiting spring connected to the control valve means and adapted to be connected to the brake pedal actuator; and a hydraulic dual-circuit main cylinder connected to the booster cylinder, the dual-circuit main cylinder including a double piston defining a primary and secondary pressure chamber for pressurizing the



rear and front brake circuits, respectively, the improvement comprising:

a separating wall connected to the booster cylinder and the dual-circuit main cylinder separates the storage pressure chamber from the primary pressure chamber, with the surface of the booster piston which defines the storage pressure chamber facing the primary pressure chamber, and with the dual-circuit main cylinder having means for connecting the primary pressure chamber to the rear brake circuit.

4,126,997

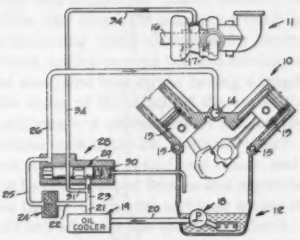
METHOD FOR LUBRICATING TURBOCHARGED ENGINES

Ralph B. Henson, Creve Coeur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 693,235, Jun. 4, 1976, Pat. No. 4,058,981. This application Jul. 14, 1977, Ser. No. 815,746

Int. Cl.[2] F02B *33/40*

U.S. Cl. 60—605 **6 Claims**



1. A method for communicating lubricant to the crankshaft and rod bearings of an engine, to the bearing of a turbocharger mounted on the engine and to the cooling jets associated with pistons reciprocally mounted in the engine comprising the steps of

first communicating lubricant only to each of said crankshaft and rod bearings and the bearings of said turbocharger upon start-up of said engine and

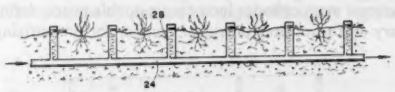
second communicating lubricant to each of said crankshaft and rod bearings, the bearings of said turbocharger and to said cooling jets after start-up of said engine and when the pressure of said lubricant exceeds a predetermined level.

4,126,998

IRRIGATION APPARATUS

Gideon Gilead, P.O. Box 26025, Jerusalem, Israel

Filed Oct. 14, 1977, Ser. No. 842,160
Int. Cl.[2] E02B *13/00*; B05B *15/00*
U.S. Cl. 405—51 11 Claims



1. Irrigation apparatus, comprising:

a first layer of sheet material;

a second layer of sheet material overlapping said first layer, at least one of said first and second layers of sheet material having preformed raised areas therein between said two layers, said first and second layers being bonded together at touching surfaces surrounding said raised areas in such a manner that a primary flow conduit is formed between said sheet materials, and at least one pressure reducing path, in fluid flow contact with said primary flow conduit, is formed, said pressure reducing path being formed in said sheet materials at raised areas thereof,

whereby upon use, fluid flows through the primary flow conduit, into the pressure reducing path and exits in a trickle through an exit port which may be opened in said pressure reducing path upon use.

4,126,999

DEVICE FOR VIBRATING THE SOIL

Joris Kniep, No. 14, Moerdijksestraat, Oudenbosch, Netherlands

Filed Jun. 21, 1977, Ser. No. 808,444
Claims priority, application Netherlands, Jun. 30, 1976, 7607220
Int. Cl.[2] E01C *19/30*; E02D *3/06*
U.S. Cl. 405—258 21 Claims

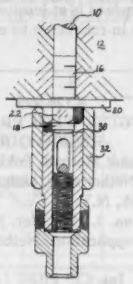
1. A ground vibrator comprising: at least one elongated rod adapted to be inserted into the ground, said rod having upper and lower ends; a vibration source operatively engaged with the upper end of the rod for vibrating the rod; at least one reasonance element secured to the lower end of the rod and at least one of said rod and vibration source including means for establishing the direction of vibrations from the vibration source such that the direction of said vibrations exhibits a defined departure from the longitudinal axis of the rod.

4,127,000

METHOD AND APPARATUS FOR INSTALLING CHEMICAL ANCHOR BOLT ASSEMBLIES IN EARTH FORMATIONS

Robert H. Montgomery, Jr., Fishertown, and Raymond D. Evans, Jr., Bedford, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Feb. 7, 1977, Ser. No. 765,972
Int. Cl.[2] E21D *21/00*; B25B *13/48*
U.S. Cl. 405—261 7 Claims



1. A wrench for installing anchor bolt assemblies having a rod threaded on at least one end and a nut on the threaded end of the rod, said wrench comprising; a rotatable sleeve having a configuration so as to engage and drive the nut in rotation on the rod, a member nonrotatably mounted with said sleeve and engaged with said sleeve so as to have an axial reciprocal sliding movement with said sleeve, said member having opposing ends with one end adapted to abut the axial end of the rod and the other end of said member adapted to be driven in rotation, and means urging said one end of said member into an axially remote position from the part of the sleeve that engages the nut.

4,127,001

INORGANIC CEMENT GROUTING SYSTEM FOR USE IN ANCHORING A BOLT IN A HOLE

Ernst A. Tomic, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 6, 1977, Ser. No. 830,474
Int. Cl.[2] E21D *20/02*; C04B *7/02*
U.S. Cl. 405—261 7 Claims

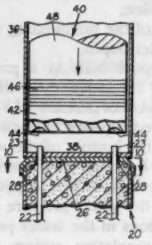
1. In a grouting system for use in a hole in combination with a reinforcing member wherein a hardened grout is formed around the reinforcing member in the hole by the reaction of at least two mixed components of an inorganic grouting composition, thereby anchoring the reinforcing member in the hole, a first component of the inorganic grouting composition comprising a slush of a particulate inorganic cement and a liquid which is nonreactive therewith, a second component, separated from the first, comprising being a liquid which is reactive with said inorganic cement, and sand being present in at least one of the components, the improvement comprising, as the sand, a graded sand wherein the deviation of the maximum and minimum particle sizes from the median particle size of a size cut which includes 90 percent or more of the particles is more than about ± 20 percent, and wherein particles larger than about 600 microns constitute no more than about 10 percent of the total sand volume, sand having such grading and fineness imparting higher shear strength to the hardened grout, and facilitating the use of said grouting composition in packaged form.

4,127,002

METHOD FOR FORMING A CONCRETE PILING FOUNDATION

Arthur W. DeWitt, P.O. Box 20541, Portland, Oreg. 97220

Filed Nov. 25, 1977, Ser. No. 854,726
Int. Cl.[2] E02D 5/50
U.S. Cl. 405—239 6 Claims



1. A method for building-up an elongate pre-formed concrete pile portion while said pre-formed portion is in place in terrain to form a finished piling foundation of uniform height, comprising;

(a) placing in terrain an elongate pre-formed concrete pile portion having a plate member overlying the upper end thereof and a plurality of elongate members of deformable malleable metal fixedly attached to said plate member so as to have deformable end portions projecting from said plate member;

(b) mounting an upright shell enclosure of a first predetermined height, having a base plate with a plurality of perforations at one end thereof, upon said pre-formed portion while in place in terrain such that said perforations in said base plate overlie said deformable end portions of said plate member with said deformable end portions extending into said shell enclosure and with said shell enclosure mechanically supported by said pre-formed portion;

(c) applying an impacting force with the driving hammer of suitable pile driving equipment upon a follower placed inside said shell enclosure in engagement with said deformable end portions causing deformation of said deformable end portions so as to fixedly attach said base plate, and thereby said shell enclosure, to said plate member of said preformed portion;

(d) driving both said pre-formed portion and said shell enclosure simultaneously to bearing depth in said terrain;

(e) after step (d) cutting off an upper portion of said shell enclosure such that said shell enclosure has a second predetermined height and projects only a predetermined distance above a reference terrain level; and

(f) pouring a hardenable plastic material into said shell enclosure so as to form a finished piling foundation of uniform height having a preformed portion and a cast-in-place portion.

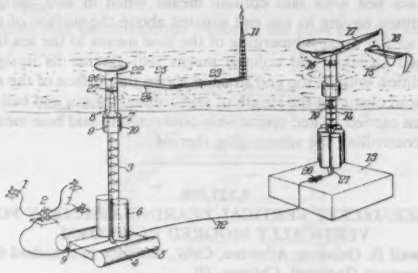
4,127,003

PRODUCTION EQUIPMENT FOR OIL-FIELDS AT SEA

Robert Vilain, Maisons Alfort, France, assignor to Enterprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

Filed Jun. 27, 1977, Ser. No. 810,189
Claims priority, application France, Jun. 30, 1976, 76 19961
Int. Cl.[2] B63B 35/44; E21B 43/01
U.S. Cl. 405—202 10 Claims

1. In an offshore oil-well installation, base means situated at the bottom of the sea, column means extending upwardly from said base means to an elevation above sea level, said column means having a bottom end articulated to said base means and having above sea level a top end carrying a rotatable head means for turning about the axis of said column means, floating means floating on the sea and carrying distant from said column means a flare means for burning gas, and connecting means connecting said floating means to said head means for turning therewith, so that said floating means on the one hand



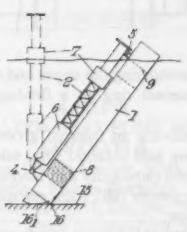
maintains said flare means distant from said column means and on the other hand brakes the swinging movement of said column means with respect to said base means.

4,127,004

OFF-SHORE PLATFORMS AND METHODS FOR INSTALLING THE SAME

Robert H. Vilain, Maisons Alfort, France, assignor to Enterprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

Filed Jun. 27, 1977, Ser. No. 810,190
Claims priority, application France, Jun. 30, 1976, 76 19967
Int. Cl.[2] E02B 17/00; E02D 27/52
U.S. Cl. 405—202 15 Claims



1. A reservoir and articulated column assembly comprising elongated hollow base means for assuming a floating condition acting as a transporting vessel as well as for assuming a submerged condition resting on a sea bed and serving as a storage reservoir, said elongated base means having a length which is at least on the order of the depth of the sea at the location where the base means is submerged to rest on the sea bed, elongated column means having a length which is at least almost as great as the length of said base means, said elongated column means having opposed bottom and top ends, and connecting means fixedly carried by said base means at an upper surface thereof and adjacent one end region thereof, said connecting means being connected to said bottom end of said column means for providing an articulated connection of said column means at said bottom end thereof to said base means according to which said column means is movable in all directions at said articulated connection with respect to said base means, so that said column means while connected by said connecting means to said base means is capable of extending horizontally along the upper surface of said base means with the top end of said column means situated adjacent an end region of said base means which is opposed to said one end region thereof while said base means assumes said floating condition acting as a vessel for travelling to the location where said base means is to be submerged while transporting said column means to the latter location, float means carried by said

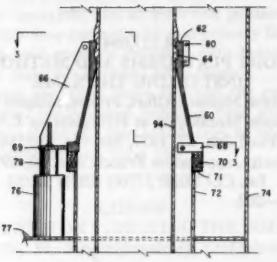
column means for causing the latter automatically to assume an upright condition when the base means is submerged to engage the sea bed with said column means when in said upright condition having its top end situated above the surface of the sea, so that upon submerging of the base means to the sea bed at said location said column means will assume its upright condition with its top end situated above the surface of the sea without changing the length of said column means, and ballast means carried by and operatively connected to said base means for controlling the submerging thereof.

4,127,005

RISER/JACKET VERTICAL BEARING ASSEMBLY FOR VERTICALLY MOORED PLATFORM

Bodwell D. Osborne, Atherton, Calif., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 3, 1976, Ser. No. 720,478
Int. Cl.[2] B63B *35/44*
U.S. Cl. 405—227 **3 Claims**



1. A system for connecting the upper end of a tensioned riser pipe having an external ring to a floating structure which comprises:

a rigid bracket having an internal groove complementing and surrounding said external ring, said bracket tapering downwardly and outwardly and having a lower shoulder (**69**) and ring member (**68**), each essentially perpendicular to said riser pipe,

a bulkhead (**77**) on said floating structure,

a bearing plate (**71**) supported by said bulkhead, and

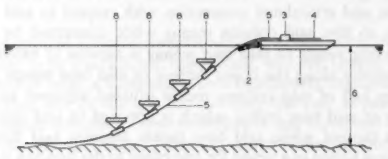
a jack (**76**) between said bulkhead and said shoulder, said jack having a ram (**78**) extendible essentially parallel to said riser pipe so that axial tension can be applied to said riser pipe.

4,127,006

METHOD AND EQUIPMENT FOR INSTALLING MARINE PIPELINES TO EXTREMELY GREAT WATER DEPTH

Johannes F. Oosterkamp, Kolgansstraat 18, Strijen, Zuid, Netherlands

Filed Mar. 26, 1976, Ser. No. 670,872
Claims priority, application Netherlands, Oct. 3, 1975, 7511638
Int. Cl.[2] F16L *1/04*
U.S. Cl. 405—171 **3 Claims**



1. A method for installing marine pipelines by assembling the pipeline on a laying vessel and gradually lowering the pipeline in the water, comprising the steps of:

attaching underwater buoyancy support units to the pipeline at spaced intervals with an adjustable resistance roller means for controlling the position of the support units on the pipeline;

controlling the rolling of the support units along the pipeline by varying the rolling resistance or tension of the roller means on the pipeline;

sensing the pressure of the surrounding water which represents a certain water depth;

maintaining the support units at a predetermined water depth by adjusting the buoyancy of the support units and the rolling resistance or tension of the roller means to maintain the desired pipeline configuration between the laying vessel and the bottom of the water such that the support units at least in part neutralize the pipeline stresses, said buoyancy of said support units being adjusted by sensing the water pressure in the surrounding water with deviations in the water pressure activating a buoyancytension regulating system that automatically brings the support unit back to the set level by adjusting the buoyancy and rolling resistance tension of the unit, said maintaining of said support units being accomplished by the following specific steps:

adjusting the position of each support unit along the pipeline by temporarily reducing the rolling resistance to allow the buoyancy of the unit to cause the unit to move upwardly to a new position;

adjusting the vertical position of the unit and thus of the pipeline by adjusting the buoyancy of each support unit without decreasing the rolling resistance to allow movement along the pipeline; and

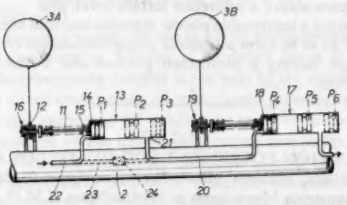
adjusting the position of the support unit along the pipeline and the vertical position of same by adjusting the rolling resistance in combination with changing the buoyancy of the unit.

4,127,007

INSTALLATION FOR RELEASING SUBMERGED FLOATS

Francis D. A. Mathieu, Nogent sur Marne, and Edmond Saintenoy, Paris, both of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France

Filed Mar. 14, 1977, Ser. No. 779,022
Claims priority, application France, Mar. 18, 1976, 76 07906; Dec. 23, 1976, 76 38900
Int. Cl.[2] F16L *1/00, 3/00*
U.S. Cl. 405—171 **18 Claims**



1. An installation for the release of a set of floats connected by individual cables to support a structure submerged in an aqueous medium, comprising a corresponding set of attachment means fixed on the structure and releasably holding one end of each said cable, the other end carrying the float, liberating means on said structure co-operating with each said attachment means for disconnecting therefrom the said one end of the cable held thereby, a release control station located a distance away from all said liberating means,

a main connecting means connecting the control station to a first one of said liberating means, and a series of intermedi-

ate connecting means fixed on the structure connecting each said liberating means to another adjacent liberating means,

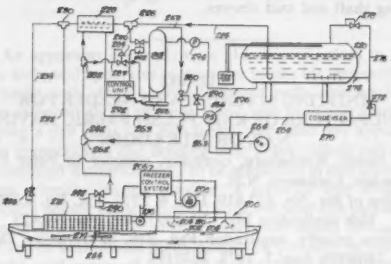
said liberating means comprising two parts, a first part integral with the structure and a second part movable with respect to said structure and attachment means to remove floats in response to actuation from said release control station.

4,127,008

METHOD AND APPARATUS FOR COOLING MATERIAL USING LIQUID CO_2

Lewis Tyree, Jr., 145 Briarwood Ave., North, Oak Brook, Ill. 60521

Filed Nov. 1, 1976, Ser. No. 737,440
Int. Cl.² F25D *25/00, 3/12*
U.S. Cl. 62—62 **24 Claims**



1. A method for cooling material using liquid CO_2, which method comprises

supplying high pressure liquid CO_2 to a holding chamber from a liquid CO_2 storage vessel system,

reducing the pressure of said liquid CO_2 at said holding chamber to below 75 psia to create CO_2 vapor and CO_2 snow thereby forming a low-temperature coolant reservoir in said holding chamber,

removing said CO_2 vapor from said chamber,

compressing said removed CO_2 vapor and condensing same,

supplying the material being cooled to a refrigeration enclosure having heat-transfer means therein,

lowering the temperature in said refrigeration enclosure to about 0° F. or below by circulating a gaseous atmosphere within said enclosure past said heat-transfer means which is cooled by CO_2, and

removing heat from said heat-transfer means by interchanging same with the latent heat of said solid CO_2 snow in said holding chamber and thereby melting said snow.

4,127,009

ABSORPTION HEAT PUMP ABSORBER UNIT AND ABSORPTION METHOD

Benjamin A. Phillips, Benton Harbor, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

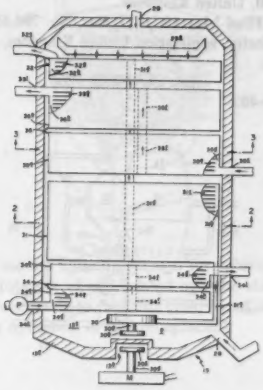
Filed May 12, 1977, Ser. No. 796,084
Int. Cl.² F25B *15/00, 37/00*
U.S. Cl. 62—101 **29 Claims**

16. In a method of absorption heat exchange including the steps of generating a refrigerant vapor from an absorbent solution rich in refrigerant, condensing the refrigerant vapor, evaporating the condensed refrigerant vapor and absorbing the evaporated refrigerant vapor into an absorbent solution weak in refrigerant to form the absorbent solution rich in refrigerant, the improvement in which the absorbing step comprises:

forming a falling film of absorbent solution within a vessel on heat exchange surfaces from a first, top end of the vessel to a second bottom end of the vessel;

releasing a refrigerant vapor to an inlet adjacent the second, bottom end of the vessel into a zone adjacent the falling film;

absorbing the refrigerant vapor in the zone into the absorbent solution; and withdrawing heat from the falling film through the heat exchange surfaces, whereby a temperature and concentration gradient is established from adjacent the first, top end to the second, bottom end.

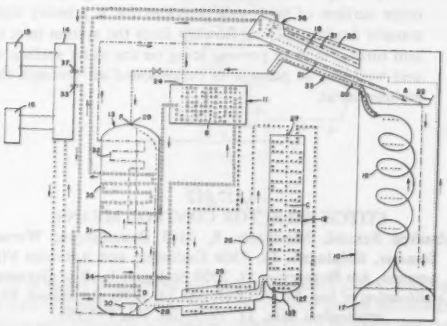


4,127,010

HEAT ACTIVATED HEAT PUMP METHOD AND APPARATUS

Benjamin A. Phillips, Benton Harbor, Mich., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed May 13, 1977, Ser. No. 796,773
Int. Cl.² F25B *15/00, 37/00, 33/00*
U.S. Cl. 62—101 **19 Claims**

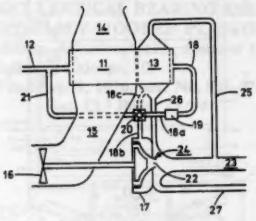


1. In a heat activated absorption heat pump apparatus having a generator, a condenser, an evaporator, an absorber, a first coolant pathway through the absorber and condenser, a second coolant pathway through the evaporator, a rich liquor pathway from the absorber to the generator, a weak liquor pathway from the generator to the absorber and a refrigerant vapor pathway from the generator to the condenser; the improvement which comprises the rich liquor pathway being located in heat exchange relation with a portion of the interior of the absorber, with the weak liquor pathway and with the refrigerant vapor pathway.

4,127,011
AIR CYCLE AIR CONDITIONING SYSTEMS

George R. Giles, Crewkerne, and Donald Richards, Yeovil, both of England, assignors to Normalair-Garret (Holdings) Limited, Yeovil, United Kingdom

Filed May 13, 1977, Ser. No. 796,651
Claims priority, application United Kingdom, May 18, 1976, 20483/76
Int. Cl.[2] F25D 9/00
U.S. Cl. 62—402 21 Claims



1. An air cycle air conditioning system including, in combination,

an air system inlet for connection with a supply of pressurized air,

an air system outlet for connection with a region to which conditioned air is to be delivered,

an air expansion turbine connected between the system inlet and the system outlet,

said turbine including an inlet, turbine nozzles, a turbine wheel, and a turbine outlet whereby air passing through the inlet and turbine nozzles is directed onto the turbine wheel to deliver expanded air to the turbine outlet,

passage means connecting the system inlet and said turbine inlet,

said passage means including a wall disposed in said turbine, said wall having an inner surface defining at least a part of said turbine outlet, said wall having an outer surface defining at least a part of the conduit connection between said system inlet and said turbine inlet,

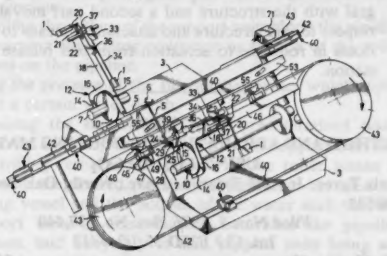
whereby in operation of the air conditioning system the outer surface of said wall provides for a primary heat transfer from supply air flowing from the system inlet to said turbine inlet to prevent icing on the inner surface of said wall due to passage of conditioned air through the turbine outlet.

4,127,012
STITCH SELECTOR CONTROL MEANS

Manfred Schmid, Morikestr. 8, 7445 Bempflingen; Werner Sommer, Kolpingstr. 51, 7300 Esslingen, and Antonius Vinnemann, Am Bopserweg 11, 7000 Stuttgart 1, all of Germany

Continuation of Ser. No. 705,055, Jul. 14, 1976, abandoned. This application Mar. 11, 1977, Ser. No. 777,155
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531762
Int. Cl.[2] D04B 7/00, 15/66
U.S. Cl. 66—75.2 80 Claims

1. A machine for producing loop fabrics, comprising: at least one bed; a plurality of knitting tools movably mounted in said bed; a driving shaft; means for rotatingly mounting said driving shaft in said bed; at least two adjoining sleeves being mounted rotationally fast but axially slidable on said shaft, a gap being provided between said at least two sleeves; a plurality of eccentric cam means which are arranged with an angular staggered relationship and mounted on said sleeves rotationally fast therewith and axially unslidable thereon; and a plurality of means for drivingly connecting said cam means with said

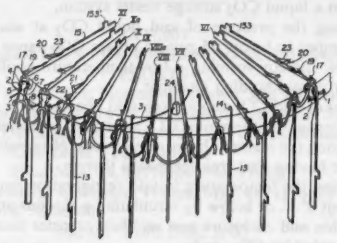


knitting tools for knitting purposes during rotation of said driving shaft and said sleeves.

4,127,013
KNITTING MACHINE AND NEEDLE FOR MANUFACTURE OF KNIT PLUSH FABRIC HAVING A NAP, OR PILE LOOPS

Otto Nuber, Rottenburg, Germany, assignor to Peter Fleischhacker, Lochmere, N.H.

Division of Ser. No. 637,819, Dec. 4, 1975, Pat. No. 4,026,126. This application Mar. 10, 1977, Ser. No. 776,423
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1974, 2458009; Aug. 7, 1975, 2535197
Int. Cl.[2] D04B 35/04, 9/12
U.S. Cl. 66—92 12 Claims



1. Circular knitting machine to make knit plush fabrics having a base knitted fabric in which base yarn (1) is knitted to form knit stitches or loops (2) and an inlay or plaiting plush yarn (3) having loops and side portions is interknitted with and anchored in the base fabric

, comprising

two oppositely located needle beds, each of said beds being formed with guide slots, and including a control means to control projection and retraction of knitting machine sliding elements located in said slots

wherein the knitting machine sliding elements of one of the beds comprise

plush knitting needles, (15) having a hook end (17, 207);

a latch tongue (19, 208) located to close over the hook (17, 207);

an auxiliary angled latch (20, 209) pivoted to rotate with respect to the needle shank in parallel with operation of the latch tongue (19, 208);

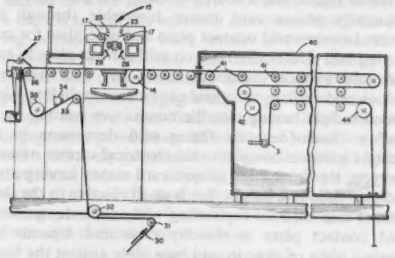
and means (23, 210) secured to the needle locking said auxiliary angled latch (20, 209) in predetermined positions on said needle (15);

and wherein the knitting machine sliding element on the other of the beds comprise sinker lamellae (13, 131, 143).

4,127,014
APPARATUS FOR DYEING PILE FABRIC WEBS

James D. Miller, and Buddy A. Sewell, both of Dalton, Ga., assignors to Shaw Industries, Inc., Dalton, Ga.

Filed Jun. 1, 1977, Ser. No. 802,583
Int. Cl.[2] D06B *1/06, 11/00*
U.S. Cl. 68—13 R 6 Claims



1. An apparatus for applying a plurality of colors to a pile fabric web, said apparatus comprising means for transporting a pile fabric web along a predetermined path; dye applicator means mounted above said pile fabric web transport means for applying a dye onto said pile fabric web; said dye applicator means comprising a dye holding tray; a dye pickup roll rotatably mounted within said tray to be immersed in dye contained therein whereby during rotation, a layer of dye is coated thereon; a doctor blade mounted adjacent said dye pickup roll for removing said layer of dye therefrom; means defining an extension of said doctor blade defining a plurality of channels whereby said removed layer of dye is divided into separate streams or drippings with each said channel having a distinct discharge point forming a separate dye stream or dripping which will fall by gravity onto the pile fabric web being transported thereunder; the said discharge points being arranged in a pattern lateral to the direction of travel of the pile fabric web onto which color is being applied; interruptor means for blocking the flow of dye through at least one preselected said channel whereby said separate stream of dye or dripping is prevented from being formed at the corresponding discharge point of the said preselected one channel; conduit means mounted adjacent to said plurality of channels for selectively discharging a different dye in proximity with the discharge point of said channels to cause a stream or dripping of the different dye or color to fall by gravity onto the pile fabric web being transported thereunder in substantially the same area thereof as a separate stream or dripping being discharged from the discharge point of the said one preselected channel would fall were said one preselected channel not blocked by said interruptor means.

4,127,015
AGITATOR ASSEMBLY WITH CLOTHES CAMMING RAMP FOR AUTOMATIC WASHER

Clark I. Platt, and Jack F. Clearman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

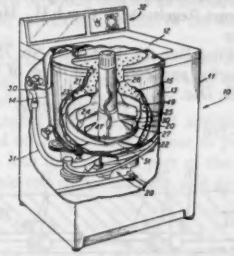
Filed Oct. 6, 1977, Ser. No. 840,025
Int. Cl.[2] D06F *17/10*
U.S. Cl. 68—133 15 Claims

1. In a washing machine having a washing receptacle for containing fabrics to be washed, agitator means within said receptacle, and drive means having a drive shaft engageable with said agitator means, an improvement in said agitator means comprising:

a first agitator element in said receptacle connected to said drive shaft for rotational oscillating motion therewith, said first agitator element having a skirt formed on a lower portion thereof,

a second agitator element in said receptacle disposed generally below the skirt of said first agitator element, said second agitator element having fabric camming means projecting upwardly therefrom in the form of a spiral ramp to force fabrics upward in the receptacle, and

coupling means interconnecting said first agitator element

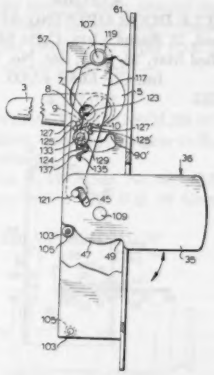


with said second agitator element for substantially unidirectional rotation of said second agitator element in said washing receptacle to facilitate rollover of fabrics during a washing operation in said receptacle.

4,127,016
SAFETY LOCK

Knud Ibsen, 451 W. Mall, Apt. 1518, Etobicoke, Ontario, Canada

Continuation-in-part of Ser. No. 738,464, Nov. 3, 1976, abandoned. This application Jul. 22, 1977, Ser. No. 818,226
Int. Cl.[2] E05B *65/10;* E05C *3/10*
U.S. Cl. 70—92 7 Claims

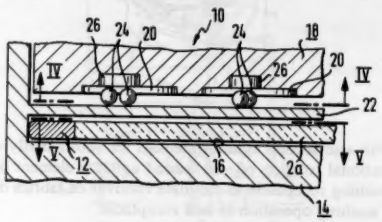


1. A safety lock for use in a door, said safety lock comprising a lock housing, a pivotal bolt, bolt control means including a lever arm pivotally secured in said housing to pivot said bolt from a locking to an unlocking position, rotatable key actuated means and rotatable handle means for pivoting said lever to pivot said bolt approximately 90° from a locking to an unlocking position and means for restricting the rotation of said handle means to an angle of less than 180°, said key actuated means operating independently of said handle means and being adapted to rotate through an angle of at least 180°, said pivotal bolt extending from said housing when in said locking position, said key actuated means and said handle means being accessibly located on opposing sides of said housing.

4,127,017
METHOD OF PRODUCING MAGNETIC BODIES AND THE USE THEREOF IN MAGNETIC LOCKS

Branko R. Perkut, Hamburg, Fed. Rep. of Germany, assignor to MRT Magnet-Regeltechnik G.m.b.H., Hamburg, Fed. Rep. of Germany

Filed Dec. 15, 1976, Ser. No. 750,916
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558159; Dec. 30, 1975, 2559203
Int. Cl.[2] E05B *47/00*
U.S. Cl. 70—276 **4 Claims**

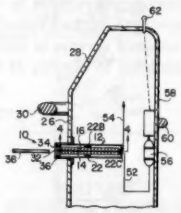


1. A magnetic code device comprising, in combination, a magnetic body formed of a magnetic material having a low magnetic permeability comprising a thin member having a thickness defined by oppositely related parallel flat first and second surfaces, at least one localized magnetic zone defined at said first surface, said zone being defined by the material of said body by a magnetic dipole substantially parallel to and at said first surface whereby both poles of said dipole are located at said first surface, a dipole defined at said first surface having a depth into said body less than the thickness of said body, the distance between the poles of said dipole being less than 2mm, and the width of said dipole is less than the distance between the poles of said dipole.

4,127,018
VEHICLE DOOR OPENING APPARATUS

Wayne R. Brand, 21 Buena Vista, Corte Madera, Calif. 94925

Filed Mar. 18, 1977, Ser. No. 779,046
Int. Cl.[2] E05B *47/00*
U.S. Cl. 70—282 **6 Claims**



1. In combination with a hollow motor vehicle door having a pair of spaced walls and a door handle mounted on an exterior surface of one of said walls in the interior of said vehicle, apparatus for unlocking said door comprising:

a sleeve extending through the other of said walls and having an opening on the exterior surface of said other of said walls;

a cartridge mounted in said sleeve, including

a contact plate having a conductive circuit mounted on a surface thereof, portions of said circuit being spaced by a series of depressions forming coded indicia, the front edge of said contact plate having a series of indentations;

a base plate having a surface in contact with the conductive surface of said contact plate; and

means for urging said base plate surface and contact plate surface towards each other;

solenoid means mounted in said hollow vehicle door connected to said vehicle door handle within the interior of said vehicle;

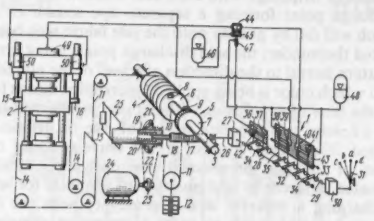
conductor means for connecting the spaced portions of said circuit mounted on said contact plate in series with said solenoid means and a source of electrical power; and

substantially planar card means insertable through said sleeve between said contact plate and base plate for completing said electrical circuit on said contact plate to energize said solenoid means to rotate said door handle to unlock said vehicle door, said card means including raised, coded indicia having metallic conductive coating on the surface thereof exactly fitting said depression in said contact plate to complete said electrical circuit mounted thereon, the front edge of said card means having arrow indicia raised to a height that is small relative to the thickness of said card for registering with said indentations on said contact plate to thereby raise and separate said contact plate relative to said base plate against the bias of said urging means.

4,127,019
HYDRAULIC PRESS CROSSHEAD CONTROL SYSTEM

Vitaly P. Vasilkovsky, ulitsa Baumana, 4b, kv. 35; Vladimir I. Koires, ulitsa Bakinskikh komissarov, 58, kv. 83; Sergei G. Khirdzhiev, ulitsa Bakinskikh komissarov, 58, kv. 48, and Viktor I. Chekmenev, ulitsa XXII Partsiezda, 19, kv. 20, all of Sverdlovsk, U.S.S.R.

Filed May 17, 1977, Ser. No. 797,791
Int. Cl.[2] B21J *9/20*
U.S. Cl. 72—21 **5 Claims**



1. A control system for controlling a hydraulic press crosshead having stop, lifting, lowering and work strokes, the work stroke including a lowering and a lifting portion, comprising:

hydraulic distributor means for controlling supply of hydraulic pressure to the hydraulic press crosshead, said hydraulic distributor means including a hydraulic distributor having valves, means for connecting said hydraulic distributor to a source of hydraulic pressure, a camshaft for changing the position of said valves, tappets for connecting said camshaft to said valves, and manual control means for adjusting the position of said camshaft thereby controlling stop, lifting, lowering and work strokes of the hydraulic press crosshead, adjustment of the camshaft changing the position of said valves thereby controlling the supply of hydraulic pressure to the hydraulic press crosshead; and

mechanical feedback system means for automatically varying the position of said tappets in response to the hydraulic press crosshead reaching a predetermined position during the work stroke, said mechanical feedback system means including a rotatable drive shaft, a first member mounted for axial movement on said drive shaft, a second member mounted for rotation with said drive shaft, said first member including projection means engageable with said second member for stopping rotation of said second member and thereby stopping rotation of said drive shaft, flexible means for operatively connecting said first member with

the hydraulic press crosshead so that said first member moves axially along said drive shaft a distance directly proportional to the amount of displacement of the hydraulic press crosshead, rotating means for rotating said drive shaft and operative to rotate said drive shaft in a first direction during a lifting stroke of the hydraulic press crosshead so that said first member moves away from said second member and operative to rotate said drive shaft in a direction opposite said first direction during the lowering portion of the work stroke of the hydraulic press crosshead so that said first member gradually moves toward said second member into a position wherein said projection means engages and stops the rotation of said second member, and feedback means responsive to the engagement of said second member by said first member and operatively associated with a portion of said hydraulic distributor means for stopping the lowering portion of the work stroke of the hydraulic press and for starting the lifting portion, said feedback means being independent from said manual control means.

4,127,020

METHOD OF MANUFACTURING SOLID WHEEL RIMS

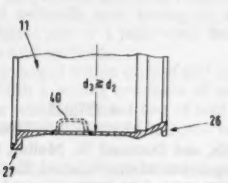
Walter Bosch, Ostfildern, Germany, assignor to Bohner & Kohle GmbH & Co., Germany

Filed Jul. 18, 1977, Ser. No. 816,758

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634515

Int. Cl.² B21D *53/30*

U.S. Cl. 72—68 **13 Claims**



1. A method of manufacturing a solid wheel rim, for example for trucks or lorries, having a wheel-rim flange at one end of a wheel-rim base and a spring-ring groove at an opposite end of the base, from a rolled and longitudinally welded sheet-metal ring of a predetermined inner diameter shaped to a predetermined section shape and having a reduced wall thickness over at least part of its length, comprising the steps of radially contracting a portion of said ring during a rounding operation to produce an annular groove zone having an inner diameter of a predetermined size, an enlarged zone having an inner diameter greater than said inner diameter of said predetermined size, and a tapered zone located between said annular groove and enlarged zones, reducing the wall thickness of said ring during a pressing operation by subjecting each of said zones to a predetermined pressure, shaping said ring at said annular groove zone by means of a rolling operation to form said spring-ring groove, and shaping said ring at said one end by means of a rolling operation to form said wheel-rim flange, whereby a finally shaped wheel rim is produced.

4,127,021

TUBE FLARING SET

Andrew L. Johnson, 5346 Greenleaf, Skokie, Ill. 60076

Filed Dec. 1, 1976, Ser. No. 746,417

Int. Cl.² B21D *41/02*

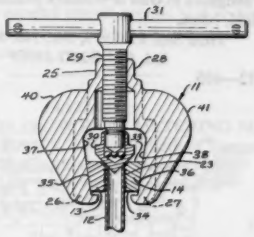
U.S. Cl. 72—313 **6 Claims**

1. In an apparatus for forming the ends of tubes and comprising

an elongated tube gripper having a top, a bottom, two sides, and a plurality of openings extending between the top and bottom with the openings at the top being enlarged, said openings being formed about substantially parallel axes and being of various diameters to accommodate tubing of various sizes, said gripper being formed by two elongated mating bars, each of which defines all of one of said sides respectively and approximately half of the width of each of said openings;

means for clamping said bars together to hold a tube in one of said openings with an end of the tube adjacent the enlarged part of the one opening; and

a device for engaging said gripper and applying pressure against said end of the tube in a manner to press the end outwardly and into the enlarged part of the opening to thereby form said one end of the tube, said device including a yoke comprising a hub adapted to be positioned in juxtaposition to said top, and a pair of legs each extending from said hub along a respective side, the improvement wherein said means comprises:



said sides tapering toward each other in a top to bottom direction, and each leg having a face adjacent the respective side, in contact with the respective side and tapered corresponding to the respective side, whereby as a said pressure is applied to said end of the tube that pressure tends to move the legs in a bottom to top direction and said faces thereby cam the sides toward each other as a result of said tapering to develop said pressure without the necessity for other elements to apply such pressure.

4,127,022

METHOD OF MANUFACTURING SOLID WHEEL RIMS

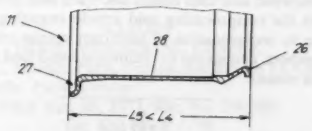
Walter Bosch, Ostfildern, Germany, assignor to Bohner & Kohle GmbH & Co., Germany

Filed Jun. 1, 1977, Ser. No. 802,452

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624873

Int. Cl.² B21D *53/30*

U.S. Cl. 72—367 **7 Claims**



1. A method of manufacturing a solid wheel rim, for example for trucks or lorries, having a wheel-rim flange at one end of a wheel-rim base and a spring-ring groove at an opposite end of the base, from a rolled and longitudinally welded sheet-metal ring of a predetermined inner diameter shaped to a predetermined section shape and having a reduced wall thickness over at least part of its length, comprising the steps of radially expanding a portion of said ring during a rounding operation to produce an annular groove zone having an inner diameter substantially equal to said predetermined inner diameter, an enlarged zone having an inner diameter greater than said predetermined inner diameter, and a tapered zone located be-

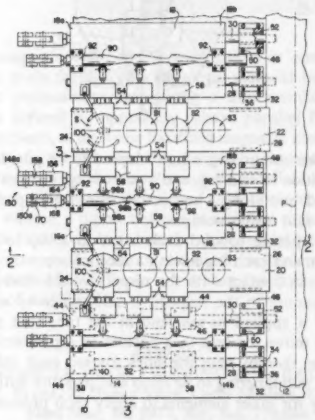
tween said annular groove and enlarged zones, reducing the wall thickness of said ring during a pressing operation by subjecting each of said zones to a predetermined pressure, outwardly bending said ring at said annular groove zone through about 90° upon application of pressure to form said spring-ring groove, outwardly bending said ring at said one end upon application of pressure to form a conical zone having flat inner and outer surfaces, and shaping said ring at said conical zone upon application of pressure to form a rounded wheel-rim flange.

4,127,023

ARTICLE TRANSFER MECHANISM

James W. Jensen, and Stanley J. Miller, both of Hastings, Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Sep. 19, 1977, Ser. No. 834,228
Int. Cl.² B21D *34/05*
U.S. Cl. 72—405 **19 Claims**



1. An article transfer mechanism including parallel spaced apart feed members having opposite ends, means supporting said feed members for reciprocation in the direction between said opposite ends, an article engaging member on each feed member, said article engaging members having opposed article engaging ends, means supporting each article engaging member for reciprocation relative to the corresponding feed member to displace said article engaging ends laterally inwardly and outwardly of the space between said feed members, cam means, means supporting said cam means for reciprocation in said direction with and relative to said feed members, follower means between said cam means and each said article engaging members for reciprocating said article engaging members in response to reciprocation of said cam means relative to said feed members, and means to reciprocate said feed members and said cam means.

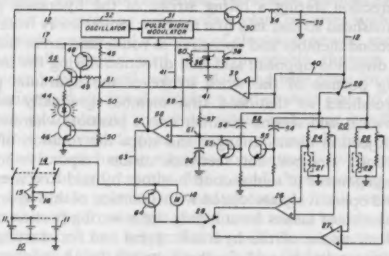
4,127,024

BATTERY VOLTAGE REGULATING AND CONDITION INDICATING CIRCUIT FOR MEASURING INSTRUMENTS

Gregory A. Bertone, Monroeville, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 16, 1977, Ser. No. 797,334
Int. Cl.² G01N *27/18*
U.S. Cl. 73—27 R **10 Claims**

1. In combination, a measuring instrument including an electrically-heated filament, means for measuring the resistance of said filament, a meter connectible to said measuring means, a battery connectible to the filament, voltage regulating means for controlling the output of said battery to supply an accurately regulated voltage to the filament, and indicator means for indicating when said instrument is in condition for use, said indicator means including a single signal means and means for controlling said signal means to indicate the occurrence of any of a plurality of conditions under which the instrument is not usable, said signal means being a normally energized visual signal, and means for turning OFF said visual signal when the voltage supplied to said filament is below the normal regulated voltage.

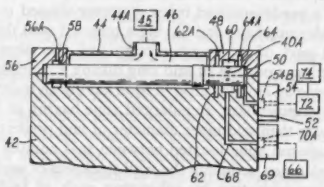


4,127,025

CIGARETTE TESTING

John A. Mills, and Desmond W. Molins, both of London, England, assignors to Molins Limited, England

Filed Mar. 14, 1977, Ser. No. 777,460
Claims priority, application United Kingdom, Mar. 16, 1976, 10596/76
Int. Cl.² G01N *15/08*
U.S. Cl. 73—38 **4 Claims**



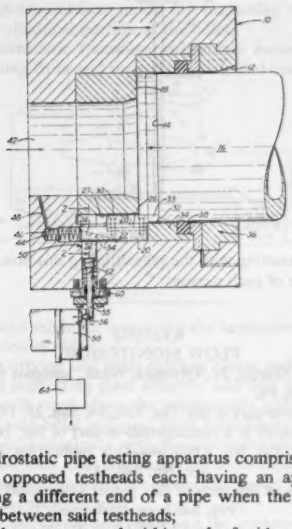
1. Apparatus for testing ventilated cigarettes which include a circumferentially extending row of perforations in the wrapper of the cigarette near the mouth end of the cigarette, comprising means defining a perforation testing space around the perforations of each cigarette in turn during a first test period, means for producing a difference in pressure between the test space and the interior of the cigarette during the first test period, means operative during a second test period for producing a difference in pressure between the interior of the cigarette and a second space around the cigarette which is separate from the perforation testing space, detector means for detecting the air flow through the wrapper of the cigarette during the first and second test periods, and means for producing a fault signal if the air flow during the first test period is below a first limit and if the air flow during the second test period is above a second limit.

4,127,026

PIPE DETECTING ARRANGEMENT FOR AN HYDROSTATIC PIPE TESTING APPARATUS

James D. Battafarano, Youngstown, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Oct. 13, 1977, Ser. No. 841,766
Int. Cl.[2] G01M 3/28, 3/02
U.S. Cl. 73—49.5 8 Claims



1. An hydrostatic pipe testing apparatus comprising:

a pair of opposed testheads each having an aperture for receiving a different end of a pipe when the pipe is arranged between said testheads;

a sealing element arranged within each of said apertures in a manner to establish a sealing condition of said different ends of the pipe with a different one of said sealing elements upon relative movement of the pipe and said testheads;

first displaceable mechanical means mounted in at least one of said testheads constructed and arranged axially inwardly of the receiving end of said one aperture with respect to its associated sealing element and displaceable by one of said different ends of the pipe on said relative movement,

second displaceable mechanical means carried by said one testhead for engaging and transferring displacement of said first displaceable means, and

movement sensitive means associated with said second displaceable means for operation by its displacement for detecting the positioning of said one end of the pipe within its associated aperture.

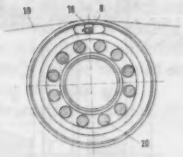
4,127,027

ARRANGEMENT FOR MEASURING STRESS DISTRIBUTION OVER THE WIDTH OF FLEXIBLE STRIP, MORE PARTICULARLY DURING COLD ROLLING OF STEEL STRIP

Bernd Berger, Dusseldorf; Helmut Thies, Kaarst; Gerd Mucke, Mettmann, and Eberhard Neuschutz, Ratingen, all of Fed. Rep. of Germany, assignors to Betriebsforschungsinstitut Vdeh Institut fur Angewandte Forschung GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 5, 1977, Ser. No. 812,520
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1976, 2630410
Int. Cl.[2] G01L 5/10
U.S. Cl. 73—144 18 Claims

1. An arrangement for measuring stress distribution over the width of a longitudinally moving flexible strip comprising a rotatable deflection measuring roller over which the strip is arranged to pass, the roller comprising a plurality of adjacent rings and a plurality of force transmitters, said force transmitters rotating together with said rings and producing parallel switching output signals, the rings being secured relatively to each other against distortion, the force transmitters in adjacent



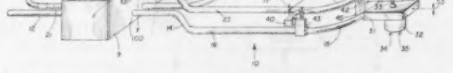
rings being circumferentially offset relative to each other and being connected in parallel circuit groups to a common rotation transmitter having an output which is designed for measurement value processing.

4,127,028

CORIOLIS MASS FLOW RATE METERING MEANS

Bruce M. Cox, and Floyd A. Gonzalez, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 7, 1977, Ser. No. 804,478
Int. Cl.[2] G01F 1/84
U.S. Cl. 73—194 B 12 Claims



1. In a meter of the coriolis force type including a tubular loop for having a flow therethrough to be measured, means for vibrating the bight end of the loop perpendicular to the plane of the loop, means fixing the input and output ends of the loop to prevent translation of said fixed ends with respect to said vibrating means for providing an axis of rotation of the vibrations of the loop through said fixed ends, and means for measuring the coriolis force couple resulting from the angular velocity of the vibrations and the velocity of the flow through the loop, the improvement comprising an outwardly directed bend in the loop and a corresponding inwardly directed bend in the loop, both of said bends arranged to maintain said tubular loop in a plane, said bends being further arranged for providing a portion of the loop wherein the torsional moment arms with respect to said fixed ends to be acted on by said coriolis force couple is increased.

4,127,029

IONIC MEASURING DEVICE

Fernand R. C. Murtin, Paris, France, assignor to La General de Fluides Geflu, Paris, France

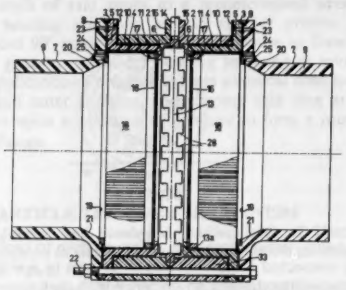
Filed Apr. 25, 1977, Ser. No. 790,560
Int. Cl.[2] G01F 1/56
U.S. Cl. 73—194 F 47 Claims

1. An ionic measuring device for measurement of mass flow or speed of gaseous flow comprising:

(a) a first annular insulating member which supports a conductive ionic source electrode;

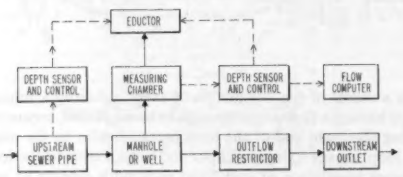
(b) a second annular insulating member spaced from said electrode in the flow direction, said second member supporting "transparent" and collecting conductive electrodes insulated from each other and from said source electrode, said "transparent" electrode being located between said source electrode and said collecting electrode; and

(c) a grounded conducting annular member located between said first and second insulating members and contiguous



thereto for eliminating surface currents between said first and second insulating members.

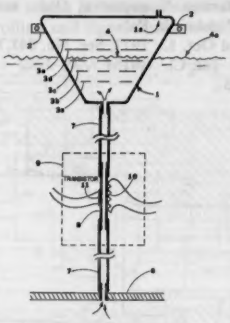
4,127,030
FLOW MEASUREMENT
Kenneth W. Martig, Jr., 2116 Lakemoor Dr., Olympia, Wash. 98502
Filed Oct. 12, 1977, Ser. No. 841,299
Int. Cl.[2] G01F *1/00*
U.S. Cl. 73—194 R **20 Claims**



1. In measuring liquid flow through a sewer or water pipe or conduit having an open end through which the liquid is discharged, the improvement comprising monitoring the depth of liquid flowing therein over time, then laterally confining the discharged liquid temporarily in a region of known dimensions, admitting liquid thereinto while maintaining constant liquid depth in the pipe or conduit, monitoring the depth of liquid in the confining region over time, and determining from the rise therein the rate of flow of liquid in the pipe or conduit.

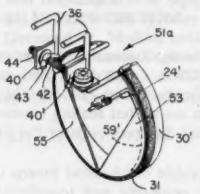
4,127,031
BOAT THEFT DETECTOR
Dale R. Barnes, R.D. #1, Kersey, Pa. 15846
Filed May 23, 1977, Ser. No. 799,363
Int. Cl.[2] G01F *1/68*
U.S. Cl. 73—204 FR **4 Claims**

1. A boat theft detection apparatus comprising a vented receiver adapted to be mounted in fixed relation to a boat for holding water at the level of the ambient water outside the boat, a tube having one end feeding water to the receiver at water level and its other end submerged in the ambient water of the boat whereby under steady state conditions the water level in the receiver is the same as the water level outside the boat, and means actuated by the sinking of the boat under the added weight of an unauthorized person for causing a transient differential between the water level in the receiver and the boat, the hydrostatic pressure of this differential causing a transient flow of water through said tube in the direction equalize the water levels in the receiver and outside the boat,



and means coacting with the tube utilizing this flow for sensing the presence of such person.

4,127,032
FLOW MONITORING
Kenneth W. Martig, Jr., Olympia, Wash., assignor to Pro-Tech, Inc., Paoli, Pa.
Continuation-in-part of Ser. No. 700,394, Jun. 28, 1976, Pat. No. 4,034,607, which is a continuation-in-part of Ser. No. 503,395, Sep. 5, 1974, Pat. No. 3,965,740. This application Jun. 8, 1977, Ser. No. 804,543
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.[2] G01F *1/20*
U.S. Cl. 73—215 **19 Claims**



1. In apparatus for monitoring flow in a conduit, the combination of support means configured to conform to the inside wall of the conduit and adapted to be compressed thereinto and to be expanded thereagainst, adjustment means for expanding the support means against the inside wall of the conduit, flexible angle V-notch weir means supported by the support means, and peripheral gasket means between the conforming portion of the support means and the inside wall of the conduit for sealing such conforming portion to such inside wall.

4,127,033
ULTRASONIC SCANNER SYSTEM FOR CAST EXPLOSIVE BILLETS
Jeffrey M. Warren, Fredericksburg, Va., and Gerald V. Blessing, Camp Springs, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 23, 1976, Ser. No. 716,734
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—622 **1 Claim**

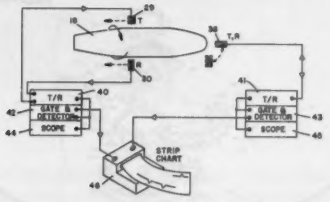
1. An apparatus for nondestructive inspection of and void detection in substantially cylindrical polyethylene-jacketed cast explosive billets having a hemispherical base comprising:
a tank for holding an ultrasonic coupling liquid;

means fixed to the bottom of said tank for supporting the explosive billet and for rotating the billet about its longitudinal axis;

a supporting plate mounted for reciprocation along the top of said tank;

a pair of ultrasonic transducers adjustably mounted on and depending from said supporting plate and operable in the through-transmission mode for inspecting the substantially cylindrical portion of the billet;

a third ultrasonic transducer adjustably mounted on and depending from said supporting plate and operable in the



pulse-echo mode for inspecting the hemispherical base of the explosive billet;

means for driving said billet rotating means and for traversing said supporting plate whereby said first pair of transducers will track along the substantially cylindrical portion of said billet and said third transducer will first be moved into proximity with the hemispherical base of the billet and then moved through an arcuate path at a constant distance from the hemispherical base of the billet for inspection thereof; and

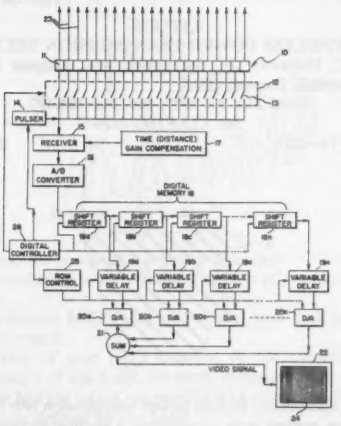
means for displaying and recording the existence and location of voids within the explosive billet.

4,127,034

DIGITAL RECTILINEAR ULTRASONIC IMAGING SYSTEM

Frank L. Lederman, and Jerome J. Tiemann, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,882
Int. Cl.[2] G01N *29/00*
U.S. Cl. 73—626 **24 Claims**



18. A method of ultrasonic imaging comprising the steps of sequentially pulsing selected transducer elements of a linear transducer array to generate a series of transmitted acoustic pulses while alternatively generating received echo electrical signals,

successively amplifying said echo signals and converting to digital echo amplitude data,

storing the echo data in a plurality of digital memory units,

periodically reading out the stored echo data from said memory units into parallel processing channels wherein the echo data is delayed and converted to delayed analog signals to thereby focus the received echoes derived from plural contiguous elements, and

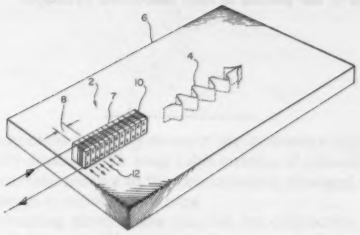
summing the delayed analog signals to produce a video output signal.

4,127,035

ELECTROMAGNETIC TRANSDUCER

Carmine F. Vasile, Newbury Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 2, 1977, Ser. No. 830,269
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—629 **14 Claims**



1. A transducer for generating an elastic wave in a conductive material, comprising:

means for creating a periodic magnetic field adjacent to and in the conductive material; and

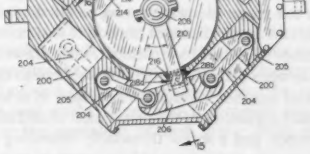
means for conducting a current in substantially one direction, at a given time, through said periodic magnetic field, whereby an elastic wave is launched in the conductive material, said wave having a wavelength related to the period of said periodic magnetic field.

4,127,036

ENGINE HAVING ALTERNATELY ROTATING ORBITAL PISTONS AND CYLINDERS

Adolf P. Pinto, 1807 Hunt Ave., Richland, Wash. 99352

Continuation-in-part of Ser. No. 684,156, May 7, 1977, Pat. No. 4,057,039. This application Aug. 29, 1977, Ser. No. 828,340
Int. Cl.[2] F16H *21/16*
U.S. Cl. 74—25 **2 Claims**



1. An engine comprising:

(a) a frame;

(b) paired coaxial shafts independently rotatably journaled in said frame;

(c) at least one pair of open-ended cylinders connected to said frame, said cylinders being located tangential to a cylindrical plane which encircles said central shafts, the cylinders in each pair being arranged in a manner such that their open ends are located adjacent to and face one another;

(d) a piston and piston rod associated with each of said cylinders, said piston configured for reciprocative travel in its respective cylinder;

(e) coupling means interconnecting the piston rods of each pair of pistons;

(f) a connecting rod attached to said coupling means and rotatably journaled to at least one of said shafts; and

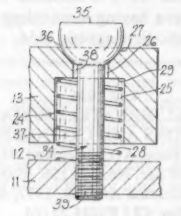
(g) escapement means associated with each of said coupling means, said escapement means configured to automatically, selectively, intermittently interengage said coupling means with said shafts in a manner such that each one of said shafts is rotated in a single direction upon reciprocation of the pistons in their associated cylinders.

4,127,037

ADJUSTING MECHANISM

Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.

Filed Nov. 8, 1976, Ser. No. 739,626
Int. Cl.[2] F16H *27/02*
U.S. Cl. 74—89.15 **4 Claims**



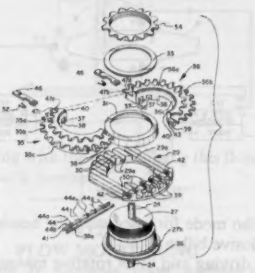
1. Apparatus for fixedly orienting a member arranged to carry a magnetic head with respect to a reference plane with three degrees of adjustment, including a base member, three bores defined in said member, a screw extending through each of said bores and threadably received in means in said base member, each of said bores extending from an upper dished recess in said member and further extending from a small diameter to a larger diameter, spring means disposed about said screws in said larger diameter portion of said bores and biasing said member from said base member, said screws having heads with undersides defined partially on a sphere so that said heads engage said member in respective recesses in at least full circle line contact regardless of the orientation of said member to said base member, and a screw threadably extending through said member into contact with said base member, two of said bores being aligned with a reference line of said member and the third bore being offset with respect to said reference line and between said two bores.

4,127,038

SPROCKET SHIFT ASSEMBLY

Bruce W. Browning, Bainbridge Island, Wash., assignor to David L. Browning; Marc S. Browning; Christopher M. Browning, all of Bainbridge Island, Wash.; John B. Browning, Sun Valley, Id.; Gloria S. Browning, Sun Valley, Id.; Michael C. Browning, Sun Valley, Id. and Paul C. Browning, Sun Valley, Id.

Filed Aug. 6, 1976, Ser. No. 712,246
Int. Cl.[2] F16H *11/00, 55/30, 55/52;* B62M *9/12*
U.S. Cl. 74—217 B **30 Claims**



1. A sprocket shift assembly comprising

a driving hinge;

a pair of sprocket sectors, each having at least one partial sprocket thereon lying in a first plane;

another sprocket, lying in a second plane parallel to the first plane, and having a pitch diameter that is different from the pitch diameter of the full sprocket formed by the partial sprockets;

means mounting at least one of said sprocket sectors to be movable with respect to said driving hinge such that the partial sprockets of the sprocket sectors can lie in one plane at the same time to form a full sprocket when the sprocket sectors are in predetermined meshed position relative to the driving hinge, and such that each movable mounted sprocket sector can be moved to place some partial sprocket teeth thereof in a second plane; and

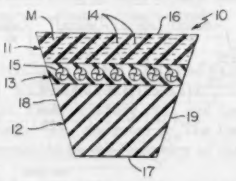
means coupling the sprocket sectors to the driving hinge for rotation therewith.

4,127,039

ENDLESS POWER TRANSMISSION BELT

Gerald C. Hollaway, Jr., Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Jan. 31, 1977, Ser. No. 764,497
Int. Cl.[2] F16G *1/26*
U.S. Cl. 74—232 **20 Claims**



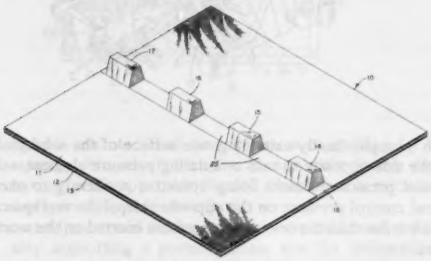
1. An elastomeric endless power transmission belt for operation in an endless path comprising, a tension section, a compression section, and a load-carrying section, at least one of said sections being made of a rubber matrix having a plurality of discrete aramid fibers embedded therein, said fibers being tenaciously bonded in position employing an adhesive bonding system comprised of (1 - 2.5) phr resorcinol formaldehyde

resin — (20 - 40) phr precipitated hydrated silica — (2 - 6) phr melamine resin, each of said fibers having an aspect ratio ranging between 100 and 2,000 which provides a substantial surface area and helps provide said tenacious bond.

4,127,040
LOCATED BELT

Alvin C. Moore, Charlotte, N.C., and Henry K. Bern, Pequannock, N.J., assignors to A.J. Sparks & Company, Grand Rapids, Mich.

Filed Jun. 27, 1977, Ser. No. 810,641
Int. Cl.[2] F16H *7/18*; F16G *1/28*
U.S. Cl. 74—240 **5 Claims**



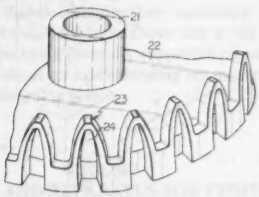
1. A belt for engagement with a pulley having a peripheral groove, said belt having a central core material and a covering layer over said core material, and a lengthwise groove in said covering layer to said core material, wherein the improvement comprises:

a plurality of cleats bonded to said belt at said belt groove at least at the bottom thereof, and disposed in spaced relationship along said belt.

4,127,041
GEAR FOR PRECISION DEVICES

Mikiharu Imazaike, 22 Tanabe Nishino-cho, 8-chome, Higashi Sumiyoshi-ku, Osaka, Japan

Filed May 18, 1977, Ser. No. 798,080
Claims priority, application Japan, Feb. 2, 1977, 52-10963
Int. Cl.[2] F16H *57/00, 1/14, 55/14*
U.S. Cl. 74—411 **6 Claims**



1. A gear for precision devices comprising:

a boss including a hole defining an axis of rotation for the gear;

a disk-shaped body mounted on the boss and extending therearound;

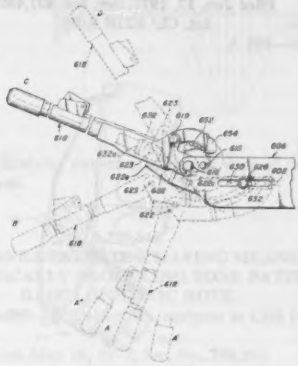
a plurality of gear teeth disposed on the circumferential periphery of the body, the teeth extending from one side of the body in directions parallel with respect to the axis of rotation defined by the hole;

wherein the gear teeth are respectively provided with means enabling the teeth to yield by elastically deforming at the time of contact with opposing gear teeth, the means comprising an aperture formed in each tooth and opened toward the other side of the disk-shaped body.

4,127,042
BRAKE CABLE OPERATING MEANS OF THE OVERCENTER TOGGLE TYPE

Eugene C. Lipshield, Moberly, Mo., assignor to Orscheln Brake Lever Mfg. Company, Moberly, Mo.

Filed Jun. 16, 1977, Ser. No. 806,963
Int. Cl.[2] G05G *1/04, 5/06*; F16D *65/38*
U.S. Cl. 74—520 **12 Claims**



1. Brake cable operating means of the overcenter toggle type for axially displacing the inner cable member of a coaxial brake cable assembly relative to the concentrically arranged tubular outer sheath member, comprising

(a) mounting plate means adapted for connection with a fixed support, said mounting plate means including a pair of spaced parallel mounting plates;

(b) anchor means rigidly connecting one end of the outer sheath member between said plates at one end of said mounting plate means, thereby to prevent axial displacement of said outer sheath member relative to said mounting plate means, said inner cable member extending axially beyond said outer sheath member and through said anchor means into the space between said plates;

(c) guide means connecting the free end of the inner cable member with said mounting plate means for linear axial displacement relative to said outer sheath member;

(d) an operating lever pivotally connected at one end with the other end of said mounting plate means, the pivot axis of said operating lever being normal to said plates; and

(e) a generally bow-shaped rigid non-extensible connecting link pivotally connected at opposite ends with an intermediate portion of said lever and with the free end of said inner cable member, respectively, the pivot axis of said link being parallel with the pivot axis of said operating lever, said operating lever being pivotable between brake released and brake applied positions in which the free end of the inner cable member is displaced toward and away from the said one end of the outer sheath member, respectively, the pivotal connection between said lever and said link and the central portion of said link being arranged, when said lever is in the brake fully applied position, on opposite sides of the plane containing the pivot axis of the lever and the axis of the pivotal connection between said link and the inner cable member;

(f) the pivot axis of said lever being laterally offset from the plane which extends normal to said mounting plates and which contains the guide axis of linear displacement of the free end of said inner cable member, thereby to reduce wear on said guide means and to provide greater efficiency in the operation of said brake cable operating means;

(g) said connecting link including a pair of pivotally connected sections that are foldable to permit movement of the operating lever beyond the overcenter brake fully

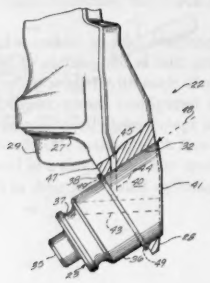
applied position, thereby to afford reserve travel of the inner brake cable at a reduced mechanical advantage under emergency brake-operating conditions.

4,127,043

ROCK BIT WITH WELDED BEARING PINS

Robert F. Evans, La Habra, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 17, 1977, Ser. No. 807,450
Int. Cl.[2] E21B *9/08*
U.S. Cl. 76—108 A **7 Claims**



1. A method for making a leg and bearing-pin assembly for a rock bit, comprising the steps of:

a. forming a rock-bit leg with a shirttail portion having a bore defining a bearing-pin seat;

b. forming a bearing pin with an inner end configured to fit into a cutting cone, a base portion configured to fit into the shirttail bore and mate with the seat, a bearing surface between the inner end and the base portion, and a radially extending annular flange between the base portion and the bearing surface;

c. positioning the bearing pin on the leg with the base portion in the seat and the flange abutting the leg adjacent the seat;

d. irradiating the adjacent surfaces of the seat and bearing-pin base portion with a beam of energy sufficient to penetrate into the flange, and to weld together substantially the entire adjacent surfaces; and

e. machining off at least a portion of the flange after the seat and base portion are welded together.

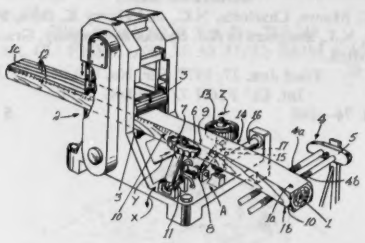
4,127,044

FOR SAWING AND FOR CONTROLLING THE SAWING PROCESS

Alan Kenyon, House No. 3, Acme Township, Sabie, Transvaal, South Africa

Filed Jul. 28, 1975, Ser. No. 599,950
Claims priority, application South Africa, Jul. 30, 1974, 74/4840; Dec. 20, 1974, 74/8122
Int. Cl.[2] B27B *3/18*
U.S. Cl. 83—446 **20 Claims**

1. An apparatus for controlling the sawing of an elongated workpiece, comprising means operative to sense the longitudinal configuration of a longitudinal side surface of the workpiece on one side only thereof as the latter passes through a saw; means to orientate the workpiece relative to the saw in accordance with the sensed configuration for sawing the same longitudinally substantially parallel to the sensed configuration, the workpiece being oriented relative to the saw by means for resiliently applying lateral orientating pressure on the workpiece on the side thereof on which the longitudinal configuration is sensed, said sensing and said orientating means being combined as a unit and including at least one resiliently mounted orientating pressure element locatable ahead of the saw on said one side only of the workpiece in contact with said longitudinal side surface of the workpiece as it passes through the saw, said pressure element being operative resiliently to exert lateral orientating pressure on said one side only of the workpiece in accordance with the configuration of the longitudinal side surface of the workpiece moving past said pressure element, and comprising at least one resiliently mounted control pressure element locatable ahead of the saw in engagement



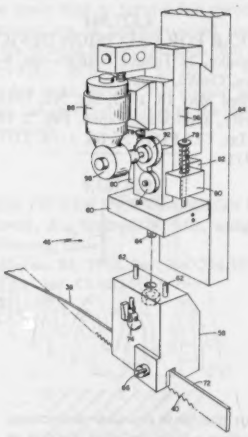
with a longitudinally extending side surface of the workpiece on the side opposite to said orientating pressure element, said control pressure element being operative resiliently to exert lateral control pressure on the opposite side of the workpiece, which is less than the orientating pressure exerted on the workpiece.

4,127,045

BAND SAW MACHINE

Joseph T. Blucher, Waltham; Stephen R. Crosby, Sterling Junction, and Dennis W. Stephens, Ashburnham, all of Mass., assignors to Wallace Murray Corporation, Fitchburg, Mass.

Continuation of Ser. No. 774,761, Mar. 7, 1977, abandoned. This application Dec. 5, 1977, Ser. No. 857,809
Int. Cl.[2] B23D *55/08*; B26D *1/46*
U.S. Cl. 83—796 **12 Claims**



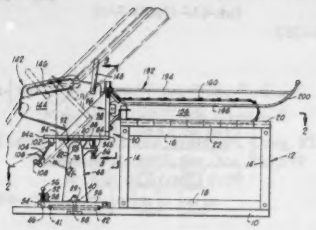
1. A band saw machine having a table for supporting in sawing position an article to be sawed, a frame, an endless saw blade mounted on said frame to provide a cutting reach adjacent said saving position and a return reach, and means for advancing said cutting reach in said frame longitudinally in the direction of its axis,

wherein the improvement comprises means for repeatedly moving said cutting reach and said supporting table toward each other in a direction transverse to the longitudinal axis of the reach and in the plane of the reach while said cutting reach is being advanced longitudinally.

4,127,046
COMBINATION PORTABLE AND STATIONARY, BENCH-MOUNTED CHAIN SAW APPARATUS

Edward L. Jackson, P.O. Box 636, Pauls Valley, Okla. 73075

Filed Nov. 15, 1976, Ser. No. 741,716
Int. Cl.[2] B27B *17/02*
U.S. Cl. 83—798 11 Claims



1. A table-mounted chain saw apparatus comprising:

a sawing table which includes an upwardly facing deck having, at the upper side thereof, a horizontally extending workpiece-supporting surface;

means adjacent said sawing table for detachably and removably supporting a portable chain saw for independent, selective pivotation about horizontal and vertical axes of pivotation, said means including:

opposed channel frame members for slidingly receiving and cradling a portion of a portable chain saw lowered thereinto; and

frame bar means for closing said channel frame members and locking said chain saw rigidly therein; and

a portable chain saw including a portion received and cradled in said channel frame members, and further comprising:

a housing for containing a prime mover;

handles on the housing for selectively pivoting the chain saw on said supporting means, and for placing said portion of the chain saw in said opposed channel frame members;

a blade guide plate projecting from said housing, between said channel frame members, and in a plane extending normal to said workpiece-supporting surface;

a flexible chain saw blade extending around the edges of said blade guide plate; and

chain guard means including bars extending along said saw blade to shield it from above and at the sides, said guard means being pivotally supported on said saw for pivotation about an axis extending normal to the plane of said blade guide plate.

4,127,047
METHOD OF AND APPARATUS FOR COMPOSING DIGITAL TONE SIGNALS

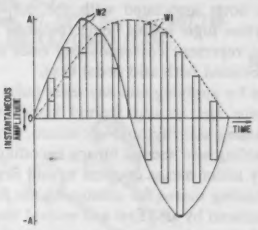
Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 21, 1977, Ser. No. 817,666
Claims priority, application Japan, Jul. 24, 1976, 51-88431
Int. Cl.[2] G10H *1/00*
U.S. Cl. 84—1.01 6 Claims

1. A method of composing a digital tone signal comprising the steps of:

squaring a digital phase progress signal defining which values vary at a substantially constant rate determined in accordance with a frequency of a note; and

applying a coordinate conversion process to said digital phase progress signal to convert the coordinate of said values at each phase so as to form a digital tone signal representing a sinusoidal wave approximated by alternately connecting downwardly opening and upwardly

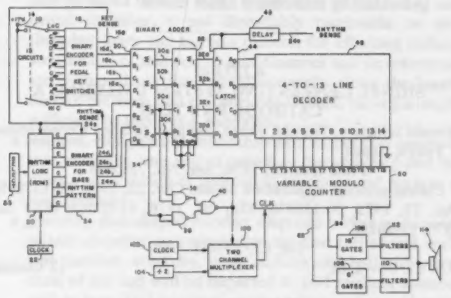


opening parabolic curves at the open ends of said parabolic curves.

4,127,048
PEDAL TONE GENERATOR HAVING MEANS FOR AUTOMATICALLY PRODUCING TONE PATTERNS BASED ON TONIC NOTE

George F. Schmoll, III, Dolton, Ill., assignor to CBS Inc., New York, N.Y.

Filed May 18, 1977, Ser. No. 798,198
Int. Cl.[2] G10F *1/02*
U.S. Cl. 84—1.03 6 Claims



1. Pedal tone generating apparatus for an electronic organ having a first plurality of pedal keys each associated with a different note of a musical scale, said apparatus comprising, in combination:

high frequency generator means for normally producing the lower of at least two octavely-related high frequency pulse signals,

a variable divider coupled to said generator means for dividing the frequency of a selected one of the high frequency pulse signals by one of a multiplicity of divisors according to one of a multiplicity of multi-bit logic code words applied to control terminals thereof, said logic code words corresponding to said divisors for producing at two output terminals of said divider octavely-related output tone signals corresponding to tones of a musical scale,

first binary encoding means coupled to said pedal keys for producing in response to actuation of a given pedal key a key sense pulse and one of said first plurality of different four-bit digital words uniquely representing the note associated with the actuated key,

rhythm logic means having a second plurality of output terminals each associated with a different note of a musical scale for storing at least one rhythm pattern and operative when activated and enabled to produce at each of said output terminals a predetermined pattern of pulses,

second binary encoding means coupled to the output terminals of said rhythm logic means for producing when actuated one of said second plurality of different four-bit

digital words uniquely representing the musical note associated with the output terminal at which a pattern pulse is present, the digital words representing the different musical notes associated with the output terminals of said rhythm logic means being the same as the digital words that represent corresponding ones of the musical notes associated with said pedal keys,

means for applying said key sense pulse to said rhythm logic means and to said second binary encoding means for enabling said rhythm logic means, when activated, and for enabling said second binary encoding means,

binary adder means coupled to said first and second binary encoding means for combining the four-bit digital words produced by said first and second binary encoding means and generating at output terminals thereof a four-bit digital word coded in the duodecimal system of counting representative of the pitch of an output tone determined by the four-bit words produced by said first and second binary encoding means, said binary adder means including logic means coupled to said high frequency generator means for causing said generator means to produce pulse signals of a frequency other than said lower frequency whenever the sum of said four-bit words exceeds the equivalent of the number twelve, and

decoder means coupled to the output terminals of said adder means and to the control terminals of said variable divider for generating and applying to said variable divider a logic code word corresponding to the four-bit binary word generated by said binary adder means.

4,127,049

SIGNAL GENERATING SYSTEM UTILIZING A CATHODE RAY TUBE

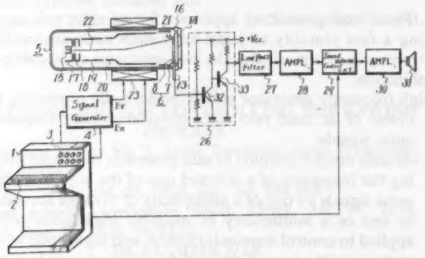
Hiroshi Ichigaya, Warabi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 21, 1976, Ser. No. 734,606

Claims priority, application Japan, Oct. 22, 1975, 50-127088; Dec. 27, 1975, 50-156976; May 14, 1976, 51-55061; May 20, 1976, 51-58293

Int. Cl.[2] G10H *3/06*

U.S. Cl. 84—1.18 **12 Claims**



1. A signal generating system comprising:

a tube including a target having width modulated elements, and means directing an electron beam against said target;

deflection means to cause the electron beam to scan said elements in a direction substantially along the width of said elements at predetermined points along the length of said elements;

variable frequency oscillator means connected to said deflection means to produce scanning fields for said beam at a selected frequency;

means to derive a pulse width modulated signal in response to the scanning of said elements by said beam; and

means to convert said pulse width modulated signal to a continuous analog signal.

4,127,050

BRASS WIND MUSICAL INSTRUMENT

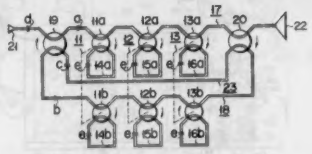
Akihiko Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 12, 1977, Ser. No. 859,562

Claims priority, application Japan, Dec. 22, 1976, 51-153320; Dec. 22, 1976, 51-153321

Int. Cl.[2] G10D *7/10*

U.S. Cl. 84—387 **5 Claims**



1. A brass wind musical instrument which comprises a first main tube having a prescribed length; a second main tube having a prescribed length; a mouthpiece capable of being selectively connected to one end of the respective main tubes; a bell capable of being selectively connected to the other end of the respective main tubes; a first changeover valve which, while remaining inoperative, carries out communication between the mouthpiece and one end of the first main tube; a plurality of bypasses arranged along the respective main tubes; and a plurality of valve assemblies, which, when operated, insert the bypasses in series into the corresponding main tubes; said instrument further comprising an intermediate tube having a prescribed length; said first changeover valve further providing, while remaining inoperative, communication between the one end of the second main tube and one end of the intermediate tube, and, when operated, communication between the one end of the first main tube and the one end of the intermediate tube, as well as between the mouthpiece and the one end of the second main tube; and a second changeover valve, which, while remaining inoperative, provides communication between the other end of the first main tube and the bell, as well as between the other end of the second main tube and the other end of the intermediate tube, and, when operated, effects communication between the other ends of the first main tube and intermediate tube, as well as between the other end of the second main tube and the bell.

4,127,051

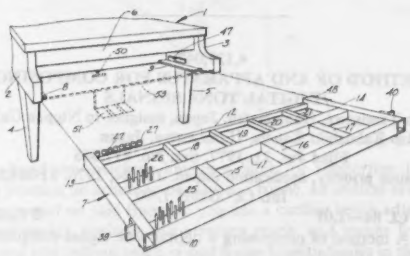
PIANO KEY FRAME

Harold A. Conklin, Jr., Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Sep. 19, 1977, Ser. No. 834,473

Int. Cl.[2] G10C *3/12*

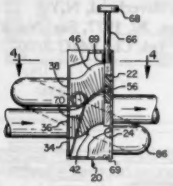
U.S. Cl. 84—423 **17 Claims**



1. A key frame for a piano consisting essentially of a rigid, generally rectangular metal frame having a front rail, a balance rail and a back rail connected at their opposite ends to end rails, a plurality of spaced apart crossrails extending between and interconnecting said balance rail and said front and back rails at

spaced apart intervals between said end rails, and mounting means on the undersurface of said key frame adjacent its corners for slidably mounting said key frame on a supporting surface.

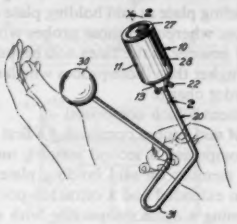
4,127,052
FLEXIBLE TUBE VALVE
Orla E. Thayer, P.O. Box 473, Waldport, Oreg. 97394
Filed Jul. 14, 1977, Ser. No. 815,578
Int. Cl.[2] G10D *9/04*
U.S. Cl. 84—388 **15 Claims**



1. A slide valve for a musical instrument of the brass family type comprising:
- a casing having a first end plate which defines primary and secondary contact surface apertures;
- a first instrument pipe and a second instrument pipe;
- a primary flexible tube having two ends;
- a secondary flexible tube having two ends;
- a key actuated tube positioning means connected to one end of said tubes and movable in relation to said casing between:
  - a. a first position in which said one end of said primary tube registers with said primary surface aperture, and
  - b. a second position in which said one end of said primary tube registers with said secondary surface aperture and said one end of said secondary tube registers with said primary surface aperture;
- a slide loop connected at one end to the outside of said first end plate, said second instrument pipe registering with said primary surface aperture, one end of said slide loop registering with said secondary surface aperture and the other ends of said primary and secondary tubes fixedly registering with said first instrument pipe and the other end of said slide loop, respectively; and resilient means biasing said tube positioning means to one of said positions.

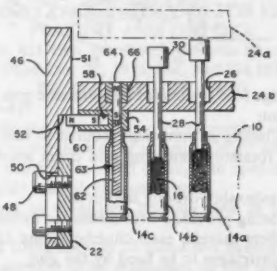
15. A musical wind instrument of the brass family type comprising:
- a lead pipe having a mouthpiece at one end thereof;
- a main bore terminating in an instrument bell;
- a slide loop;
- a casing to which said lead pipe, main bore, and opposite ends of said loop are connected;
- flexible primary and secondary sound tubes located within said casing; and
- tube positioning means movable in said casing between:
  - a. a first position in which said primary sound tube directly connects said lead pipe to said main bore, and
  - b. a second position in which said primary sound tube connects one end of said loop to one of said lead pipe and said main bore, and said secondary sound tube connects the other end of said loop to the other of said lead pipe and said main bore.

4,127,053
PERCUSSION INSTRUMENT
Martin Cohen, Maywood, N.J., assignor to Latin Percussion, Inc., Palisades Park, N.J.
Filed Jun. 17, 1977, Ser. No. 807,719
Int. Cl.[2] G10D *13/06*
U.S. Cl. 84—402 **10 Claims**



1. A percussion instrument comprising:
- a sound chamber having a cavity therein, with at least one opening thereinto, and an internally-threaded bore extending therethrough to said cavity thereof, generally opposite said at least one opening thereof;
- a vibratory, elongated rod, having an outer end portion to which is secured a striking ball, an externally threaded inner end portion which is threadably receivable within said threaded bore to effect securement of said rod to said sound chamber, a nut threadably receivable on said threaded inner end portion thereof, for effecting locking securement of said rod to said chamber and an intermediate U-shaped portion formed integrally along the length thereof between said end portions thereof, having a length sufficient to serve as a handgrip;
- a resilient, elongated member disposed within said cavity of said chamber, one end of which is free-standing and the other end of which of secured to the inner end portion of said rod; and
- a generally disc-shaped knocker disposed within said cavity of said chamber and secured to the free end of said resilient member, whereby, upon striking said ball, the vibrations of the rod will be imparted to said resilient member and, in turn, said knocker, so that said knocker will strike the walls of said sound chamber, thereby producing a percussion sound.

4,127,054
POWDER LEVEL INSPECTION SYSTEM WITH MAGNETIC LATCHING DEVICE
Lanny L. Gully, Richmond, Mo., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Oct. 26, 1977, Ser. No. 845,498
Int. Cl.[2] F42B *33/02*
U.S. Cl. 86—23 **8 Claims**



1. For use in a mechanism for inspecting the level of powder

contained in ammunition cases, which comprises a loading plate supporting a batch of the cases in a predetermined pattern, a holding plate having a pattern of holes similar to said predetermined pattern, a series of probes slidably received in said holes, and an elevator mechanism for supporting and selectively moving said holding plate between a raised position and a lowered position, said elevator mechanism supporting said holding plate with the probes therein aligned to enter the cases in said loading plate as said holding plate approaches said lowered position, whereupon those probes which encounter a normal level of powder in the cases will become elevated to a normal height higher than those probes which encounter a low or missing powder charge

the improvement which comprises:

at least one of said probes comprising a first magnet; a latch member comprising a second magnet; means supporting said latch member on said holding plate for movement between an extended and a retracted position; and catch means forming a catch cooperable with said latch member, when said holding plate is in said lowered position and said latch member is in said extended position, to latch said holding plate in said lowered position; said magnets being selected and positioned such that said one probe repels said latch member from said retracted position toward said extended position in the event said one probe reaches a height lower than said normal height when said holding plate is in said lowered position.

4,127,055

CARTRIDGE FEED SYSTEM FOR AN AUTOMATIC GUN

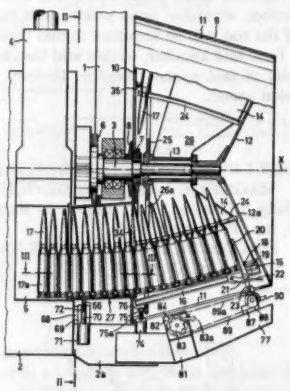
Conrad Hottinger; Bruno Ruppen; Pierre Bohler, all of Zürich, and Emil Singenberger, Ennetburgen, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Sep. 29, 1977, Ser. No. 837,727

Claims priority, application Switzerland, Nov. 26, 1976, 14904/76

Int. Cl.[2] F41D *9/00*

U.S. Cl. 89—33 D **5 Claims**



1. A cartridge feed system for an automatic gun, comprising:

a gun mount;

a drum, including a drum shaft secured to said gun mount;

means for rotatably mounting said drum about said drum shaft;

means for indexably driving said drum;

said drum being provided with means for forming a number of chambers therein, each chamber being capable of receiving cartridges to be fired by the gun;

a first feed device for moving cartridges out of each chamber of the drum;

said first feed device being stationarily arranged externally of the drum;

a storage arranged between said drum and said gun;

said storage being provided with two channels;

means for displaceably mounting said storage together with said channels;

each channel being selectively displaceable into a work position and into a rest position for the selective firing of different types of cartridges;

and

a second feed device for moving the cartridges out of the storage and delivering such cartridges to the gun while the drum is further rotated through one indexing step.

4,127,056

AUTOMATIC PISTOL BARREL LOCKING DEVICE AND SUB-CALIBER CONVERSION THEREFOR

Frederick H. Kart, Riverhead, N.Y., assignor to Kart Sporting Arms Corporation, Riverhead, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,629

Int. Cl.[2] F41C *5/00*

U.S. Cl. 89—128 **10 Claims**

1. An automatic pistol having a receiver, a slide and a barrel, with said slide mounted for recoiling movement relative to said barrel and receiver, said receiver and slide having interfitting grooves and flanges, said receiver having an upper surface above said interfitting grooves and flanges on each side of said barrel which parallels the axis of said barrel, said barrel having on each exterior side wall adjacent its rearward end an aligning cheek extending forwardly from said rearward end, parallel to the axis of said barrel, each cheek having a lower surface adapted for engagement with one of said upper surfaces of said receiver, said barrel having a downwardly projecting extension member with a screw threaded hole in the front face, a recoil spring, and a slide-stop including a pivot pin, characterized in that:

(a) a link is pivotally connected to said barrel extension member and has a hole therein which is adapted to coincide with a transverse hole in said receiver, and

(b) a locking screw disposed within the recoil spring and threadedly engaged in the threaded hole in the front face of the barrel extension member, said locking screw upon tightening thereof serving to rotate the link forwardly and thereby to pull the barrel and slide assembly into intimate contact with the receiver.

4,127,057

RECIPROCATING FLUID STROKE MOTORS WITH AUTOMATIC CONTROL

Paul Stubenruss, Kostlanerweg 4, Bressanone (Bolzano), Italy

Filed Nov. 4, 1976, Ser. No. 738,892

Claims priority, application Italy, Nov. 7, 1975, 29060 A/75

Int. Cl.[2] F01B *7/18;* **F01L** *21/04, 15/12, 31/02*

U.S. Cl. 91—52 **3 Claims**

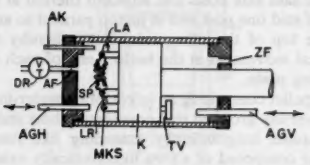
1. A differential motor comprising

a cylinder with two ends, an internal cylinder chamber, means for introducing fluid under pressure into said cylinder chamber, a discharge port communicating with said chamber at one of said ends and a variable choke at said port for controlling the rate of fluid flow exhausted from said chamber through said port, and

a differential piston in said cylinder chamber, said piston having a relatively large area face facing said one end of said cylinder, a relatively small area face facing the other of said ends and an opening therethrough between said faces,

whereby when said fluid is introduced into said cylinder chamber said piston is driven thereby toward the other of said ends by said pressurized fluid acting against both of said faces, said motor being characterized by:

valve means on said piston and movable between a first position at which said opening is closed and a second position at which said opening is open for the passage of fluid therethrough;



spring means engaging said valve means of said piston and, when said valve means is in said second position, applying a force to said valve means tending to maintain said valve means in said second position;

and actuating means mounted on said cylinder and extending into said chamber for moving said valve means to said first position as said piston moves toward the other of said ends whereupon said piston is driven toward said one end by said pressurized fluid, and for moving said valve means to said second position as said piston moves toward said one end whereupon said piston is driven toward said other end by said pressurized fluid.

4,127,058

LIQUID-COOLED CYLINDER SLEEVES

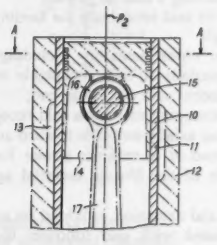
Manfred Rohrle, Nellingen, Germany, assignor to Mahle GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 602,577, Aug. 7, 1975, abandoned. This application Mar. 16, 1977, Ser. No. 778,197

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1974, 2438762

Int. Cl.² F16J *11/04*

U.S. Cl. 92—169 **6 Claims**



1. In a cylinder sleeve for a liquid-cooled combustion engine of the reciprocating piston type having a cylinder and a piston for reciprocation therein within said sleeve along the longitudinal axis thereof, said piston pivoting in a plane about a pivot pin carried by a connecting rod, the improvement in which sleeve wall thickness increases in a rotationally symmetrical manner along its periphery towards lines of intersection of the plane of piston pivoting with the wall of said cylinder sleeve.

4,127,059

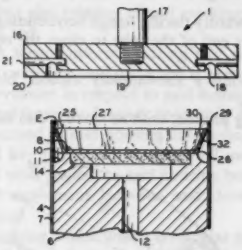
METHOD OF FORMING A CONTAINER

Frank P. Richards, Prairie Village, Kans., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 6, 1977, Ser. No. 804,133

Int. Cl.² B31C *1/06*

U.S. Cl. 93—36.5 R **5 Claims**



1. A method of forming a container having a sidewall and a bottom closure member secured together, said method including the steps of:

providing a bottom member having a generally circular bottom panel and a skirt connected to and depending from said bottom panel with a fold line therebetween with an outer first diameter, said skirt being generally in the form of a truncated cone diverging away from said bottom panel and terminating in a free end having an outer second diameter larger than the first diameter;

placing said bottom member on a free end of a mandrel generally coaxially with the mandrel with said bottom panel engaging said mandrel free end and said skirt extending generally away from said mandrel free end, said mandrel having a side surface adapted for having wrapped thereon a sidewall blank, said side surface terminating adjacent the mandrel free end and having a third diameter at the side surface point of termination larger than said first diameter;

retaining, in a selectively releasable manner, said bottom member on said mandrel free end;

wrapping a sidewall blank on said side surface and thereby overlapping portions of the sidewall blank, said second diameter being sized relative to an inside fourth diameter of the wrapped sidewall blank immediately adjacent a free end of the skirt such as to substantially prevent interference of the skirt with the wrapping of the sidewall blank about said mandrel;

securing the overlapping portions together thereby forming a tubular sidewall;

radially expanding a portion of the skirt whereby a portion of the skirt is reformed to generally conform to the shape of an interior surface portion of the sidewall adjacent the portion of the skirt; and

securing said skirt to said sidewall.

4,127,060

AUXILIARY COOKING DEVICE FOR STUFFED POULTRY AND THE LIKE

Joseph Curtis, 421 15th Ave. North, Surfside Beach, S.C. 29577

Filed Oct. 20, 1976, Ser. No. 734,103

Int. Cl.² A47J *37/04, 43/00*

U.S. Cl. 99—419 **4 Claims**

1. An auxiliary cooking device for promoting access of even heat directly to the interior of a poultry body which has been stuffed after being eviscerated through an opening in the rear end of the body, said device comprising

a shield and an elongated tapering tube of circular cross section,

said shield being formed of metal foil having a peripheral margin adapted to be positioned on the poultry body in contacting relation to the margin of said opening and being cut in its central area to form a substantially circular

opening concentric with the opening in the body and of a size to make substantial contact with the outer surface of the tube upon penetration thereby,

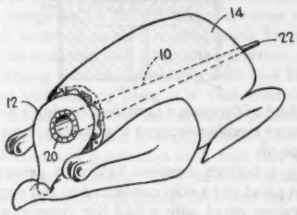
said tube being formed of metal foil of sufficient thickness such that it can be cut by conventional kitchen shears, and

said tube having an opening in its larger end of substantially the same size and shape of said circular opening in the shield, and

a radially outwardly flaring flange surrounding said opening in the larger end of the tube to close the opening in said shield, and

said tube having a substantially closed, bluntly pointed smaller end,

said tube being pushed, with its smaller end leading, succes-



sively through said penetrable area in the shield, the stuffing, and the front end of the poultry body, to a position in which the tube substantially fills the opening in the shield and the tube flange overlies the shield opening in substantial contact with the margin thereof,

said tube holding the shield against the poultry body, with the smaller end of the tube extending beyond the front end of the poultry body, accessible for shearing off and removal to provide the tube with a new smaller end having an opening of greater diameter than that of the original smaller end,

said tube being formed of a sheet of metal foil rolled loosely on itself to permit radial expansion and contraction in use to adjust the bore size of the tube to the size of the opening formed in the shield by penetration of the tube.

4,127,061

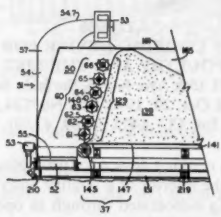
FIELD TO COTTON GIN HANDLING AND STORAGE SYSTEMS

Glover A. Husky, Lubbock, Tex., assignor to Allied Products Corp., Chicago, Ill.

Division of Ser. No. 568,004, Apr. 14, 1975, Pat. No. 4,031,003, which is a continuation-in-part of Ser. No. 513,145, Oct. 8, 1974, abandoned, and Ser. No. 428,384, Apr. 22, 1975, Pat. No. 3,879,049. This application Jan. 14, 1977, Ser. No. 759,392

Int. Cl.[2] B30B *15/00*; D01B *1/00*; B02C *1/08*

U.S. Cl. 100—100 **16 Claims**



1. System for handling and transporting seed cotton comprising a mobile press assembly, a pallet and a tilt bed transport means.

(a) said mobile press assembly comprising a plunger subassembly and a container subassembly, said container subassembly comprising a plurality of vertically extending side walls, an end wall and a movable wall with a container chamber therebetween, said pallet at the bottom of said chamber and a winch attached to said vertical end wall, said plunger assembly comprising a vertically movable tamping subassembly, said plunger assembly comprising a rigid frame means, a vertically movable center post, means supported on said frame means to move said center post vertically and quietly, and side posts, one side post on each side of said vertically movable center post, the bottom end of said center post and said side posts attached to horizontal and longitudinally extending tamper plate and flexible tension means connected from the bottom of each of said side posts to the top of the other side post, each said flexible tensioning means being at its bottom parallel to one of said side posts and adjacent thereto at the bottom end of said one post and at its top parallel to and adjacent to the top of the other side post, whereby to equalize vertical movement at the bottom end of each end of said tamping plate,

(b) said pallet comprising an imperforate water-impermeable transversely grooved thin corrugated sheet and a plurality of parallel longitudinally extending like runners, each runner composed of a two like vertically extending outwardly sloped side walls and a bottom flat smooth horizontal sheet, the side walls firmly yet resiliently joined at corners along the total length of their bottom edges to the total length of the left edge and right edges, respectively, of the bottom sheet and extending upwardly therefrom, and said sheet is firmly connected to the top of said side walls at regularly longitudinally spaced apart points,

(c) said tilt bed transport means comprising a winch and a bed, said winch attached to said bed, said bed having a length at least the length of said pallet, and

(d) the minimum radius of curvature on the bottom of said mass of cotton on said pallet moved onto the said bed is at least as great as the height of said mass of compressed seed cotton on said bed measured transversely to the horizontal surface covered by the edges of said bed.

4,127,062

OPPOSED BOX BALING PRESS

Isaac Egosi, P.O. Box 73, Kiryat Mozkin, Israel

Continuation-in-part of Ser. No. 711,338, Aug. 4, 1976, Pat. No. 4,041,855, which is a continuation-in-part of Ser. No. 603,280, Aug. 11, 1975, Pat. No. 4,006,679. This application Jul. 18, 1977, Ser. No. 816,757

Int. Cl.[2] B30B *15/30*

U.S. Cl. 100—215 **6 Claims**

1. A baling press for forming bales of fibrous material, comprising:

a receptacle having a discharge end;

infeed means on said receptacle for feeding fibrous material therethrough;

a ram follow block assembly including a follow block disposed coaxially to said receptacle and being initially located adjacent said discharge end;

reciprocable tramping means on said receptacle including a tramper head axially movable toward and away from said discharge end at a uniform stroke for forming a prepacked bale of the fibrous material against said follow block;

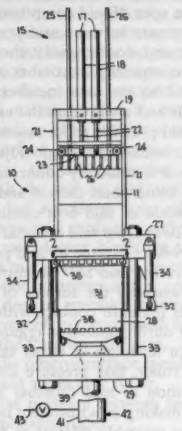
at least one axial extension provided on said tramper head;

means associated with said follower block assembly for effecting incremental movement thereof away from said discharge end in response to an increasing pre-packed bale size formed against said follow block;

a gate shiftable from a position between said discharge end and said follow block to a position away therefrom for respectively closing and opening said discharge end, openings provided in said gate facilitating the closing of said discharge end as said extensions protrude therethrough beyond said dicharge end;

further means associated with said follow block assembly for

moving said follow block toward said discharge end so that, with said gate closed over said discharge end, the



pre-packed bale is compressed against said gate into a finally compressed bale.

4,127,063

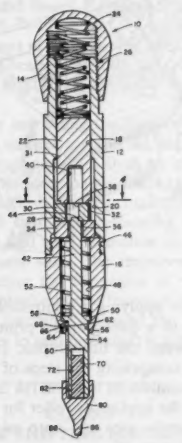
LEATHER MARKING TOOL

Rollie V. Peterson, Saugus, and Donald L. Peterson, Sylmar, both of Calif., assignors to R.D.R. Company, Sylmar, Calif.

Continuation-in-part of Ser. No. 613,442, Sep. 15, 1975, abandoned. This application May 25, 1977, Ser. No. 800,355

Int. Cl.[2] B45B *5/00*; C14B *1/56*

U.S. Cl. 101—3 R **1 Claim**



1. A marking apparatus comprising:

a housing having an internal chamber;

a hammer movably mounted within said internal chamber;

a drive rod mounted within said chamber and having one end selectively contactable by said hammer for marking;

a marking head connected by detent means to the other end of said drive rod, said detent means permitting quick and easy removal of said marking head from said drive rod and replacement with another said marking head, said detent means comprising a detent pin movably mounted in respect to said drive rod, biasing means connected to said detent pin to exert a continuous bias upon said detent pin to an extended position, said biasing means comprises a block of resilient material, said block of resilient material being located in a longitudinal opening formed within said drive rod, said detent pin in the extended position to be located within a transverse opening formed in said marking head securing said marking head to said drive rod preventing not only accidental dislodgement of said marking head but also rotation of said marking head relative to said drive rod;

anti-rotation means interconnecting said housing and said drive rod, whereby said drive rod is prevented from rotational movement in respect to said housing;

a longitudinal keyway formed upon said drive rod, a key fixedly secured to said housing connecting with said keyway, said key permitting longitudinal movement of said drive rod with respect to said housing but not permitting rotational movement between said drive rod and said housing; and

said key including a base which is circular in shape in cross-section, said base located within said keyway, said base being rotatable within said keyway to thereby minimize wear of said key due to repeated longitudinal movements of said drive rod during use of said apparatus.

4,127,064

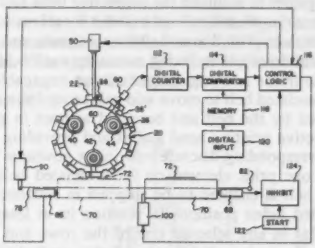
LARGE TYPE ROTARY PRINTER

Charles R. Pettis, Jr., Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Mar. 14, 1977, Ser. No. 777,108

Int. Cl.[2] B41J *1/46*

U.S. Cl. 101—93.18 **18 Claims**



1. An apparatus for printing articles, wherein the apparatus comprising:

(a) a structural framework;

(b) an annular printing cylinder mounted on said framework for rotation about its cylindrical axis, said printing cylinder having circumferentially spaced printing facets on its periphery;

(c) driving means mounted on said framework for providing a continuous driving force for continuously rotating said printing cylinder, said driving means including a plurality of substantially parallel driven shafts each mounted in a fixed position on said framework for rotation about its own axis and having its axis substantially parallel to the axis of rotation of said printing cylinder;

(d) friction means frictionally connecting each of said driven shafts and said printing cylinder for imparting rotation to said cylinder, said friction means permitting slippage between said driving means and said printing cylinder when the rotation of said cylinder is impeded;

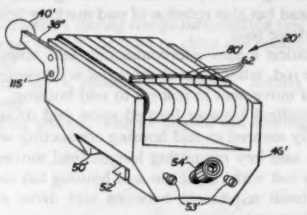
(e) means responsive to the rotational position of said cylinder for impeding the rotation of said cylinder; and

(f) means for producing relative motion between the object to be printed and said printing cylinder for bringing the object to be printed into contact with said printing cylinder.

4,127,065
ENCODING PRINTING DEVICE

Joseph A. Rybczyk, Levittown, Pa., assignor to National Computer Systems, Inc., Minneapolis, Minn.

Filed Nov. 30, 1976, Ser. No. 746,198
Int. Cl.[2] B41J 1/20
U.S. Cl. 101—111 44 Claims



1. An encoding printing device for printing in sequence related but different machine readable matrix patterns of indicia in association with appropriate printing apparatus comprising:

a support frame attachable to printing apparatus,

a plurality of continuous flexible belts arranged side-by-side relative to the support frame, each belt providing on its outside surface at least one print element capable of producing a printed mark and drive engagable means accessible from inside the belt,

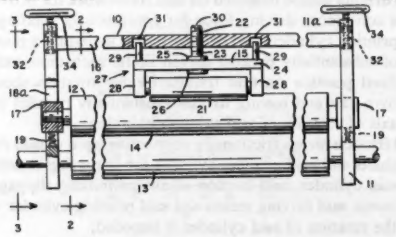
a printing head on the support frame within the belts providing support for all of the belts over a predetermined multiple row matrix printing area in opposition to printing pressures on the respective print elements during printing and engaging the respective belts within that area to provide guides to maintain the respective belts and their print elements in predetermined column locations so that each belt path over said area defines a column, and

individual drive and indexing means for each belt supported on the frame and engaging the drive engagable means of its associated belt to move said belt around the closed path defined by the belt and bounded at least in part by the respective printing head guides and providing a plurality of corresponding discrete row index positions for each at least one print element on its associated belt, whereby each belt is enabled to be stopped in successive ones of selected index positions to position its at least one print element in any selected one of the rows and relative to print elements on the other belts similarly selectively positioned within the predetermined matrix printing area.

4,127,066
ADJUSTABLE COMPRESSION ROLLER APPARATUS

Melvin Sharkey, 1614 Hereford Rd., Hewlett, L. I., N.Y. 11557

Filed May 11, 1977, Ser. No. 795,683
Int. Cl.[2] B41F 7/00
U.S. Cl. 101—132 6 Claims

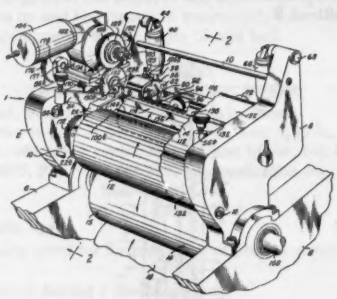


1. In a pressure roller apparatus comprising a frame, an elongate compression roller each end of which is rotatably supported by side members of said frame and the surface of which is in surface contact with another element to provide a pressure nip at the area of contact with said other element, and at least one pressure roller assembly comprising a housing rotatably supporting at least one pressure roller which contacts the surface of said compression roller opposite the surface in said pressure nip and which is adjustable in a direction towards and away from the apex of said compression roller to increase or decrease the pressure between said pressure roller and said compression roller and, consequently, the pressure in said nip, the improvement comprising a crossbar each end of which is adjustably attached to the side members of said frame for movement towards and away from the apex of said compression roller, each said pressure roller assembly being adjustably attached to said crossbar by a single adjustment means comprising a bolt which is rotatably-connected to the housing of said assembly at a centerpoint thereof and threadably engages said crossbar, rotation of said bolt causing said assembly to move towards or away from said crossbar to effect adjustment of the degree of pressure exerted by said pressure roller against said compression roller, said bolt permitting said assembly to pivot thereabout whereby the surface of said pressure roller can retain uniform pressure contact with the surface of said compression roller during operation regardless of irregularities in the roundness or levelness of either said pressure roller or said compression roller, said pressure also being variable by adjusting the position of said crossbar relative to said side members without making an adjustment in the position of each said pressure roller assembly relative to said crossbar.

4,127,067
METHOD FOR INKING PRINTING PLATES

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247, and Harvey W. Dahlgren, P. O. Box 8234, Mobile, Ala. 36608

Continuation of Ser. No. 442,764, Feb. 15, 1974, abandoned, which is a division of Ser. No. 251,740, May 9, 1972, abandoned.
This application Jun. 22, 1976, Ser. No. 698,765
Int. Cl.[2] B41F 7/26, 7/36, 31/06
U.S. Cl. 101—426 7 Claims



1. A method for applying a controlled balance of ink and dampening fluid to a lithographic printing plate at a fluid transfer area between the lithographic printing plate and an applicator roller, comprising the steps of

(A) forming a continuous uniform ink layer having a desired thickness on the applicator roller for the conveyance into said fluid transfer area and onto said lithographic plate, including the steps of

(1) depositing an excess of ink on said applicator roller,

(2) providing a metering roller adjacent to said applicator roller,

(3) metering the ink deposited on said applicator roller by forming a fluid metering nip between said applicator roller and said metering roller, said applicator roller and said metering roller cooperating to form a reservoir for said excess of ink,

(4) supporting said applicator roller and said metering roller in a preselected pressure indented relation to form said nip,

(5) rotating said applicator roller and said metering roller

such that adjacent surfaces move in opposite directions at said nip and at a preselected speed differential,

(6) controlling the thickness of said continuous uniform ink layer formed on said applicator roller by

(a) forming a continuous uninterrupted uniform ink layer on the metering roller by placing a doctor blade in cooperation with said metering roller,

(b) controlling the physical properties of said layer of ink on said metering roller by controlling temperature of the ink so as to provide a continuous uniform metering surface of ink having uniform physical properties at the said metering nip which upon contact with the ink on said applicator roller will remove all but a uniform layer of ink of a desired thickness from said applicator roller,

(c) adjusting said doctor blade for thus adjusting the thickness of said ink layer conveyed by said metering roller into said metering nip in order to create and maintain a desired precision controlled thickness in the said layer of ink conveyed by said applicator roller into the fluid transfer area,

(d) adjusting the relative surface speeds of said metering roller and said applicator roller,

(e) adjusting the pressure between said metering roller and said applicator roller,

(B) applying dampening fluid in a variable amount in accordance with the thickness of the ink layer formed in step (A) to the said layer of ink conveyed by said applicator roller at a point between the fluid metering nip and said fluid transfer area to form a controlled balance of ink and dampening fluid conveyed by said applicator roller into said transfer area without introducing dampening fluid into said metering nip.

4,127,068

EARTH STRATA FRACTURING METHOD

Calvin J. Konya, 23 Fairway La., Fairmont, W. Va. 26554; Robert W. Chase, Rte. 2, 105 William St., Morgantown, W. Va. 26506, and Seadet Ameri, P.O. Box 579, Morgantown, W. Va. 26506

Continuation-in-part of Ser. No. 764,440, Jan. 31, 1977, abandoned. This application Dec. 20, 1977, Ser. No. 862,660

Int. Cl.² C06C *13/00*

U.S. Cl. 102—23 **5 Claims**

1. In a method for increasing the flow of earth strata contained fluid, such as natural gas and oil, to a well shaft from rock formations surrounding said shaft by increasing the permeability of said rock formation by placing an explosive adjacent to said well shaft or forcing explosives into fractures adjacent to the well shaft and detonating said explosive to produce fractures in said rock formation through which said fluid will flow to said shaft, the improvement comprising substantially eliminating the formation of water during the detonation of said explosive in said fractures and in rock formation exposed to said fractures, whereby the flow of said fluid through said fractures to said well shaft is not restricted by the presence of water.

4,127,069

RAILROAD TRACK SHIFTING MACHINE WITH SHIFT LIMITING DEVICE

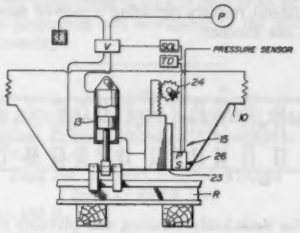
John K. Stewart, Lexington, and Helmuth von Beckmann, Columbia, both of S.C., assignors to Canron Corp., West Columbia, S.C.

Continuation-in-part of Ser. No. 694,040, Jun. 8, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,341

Int. Cl.² E01B *29/04*

U.S. Cl. 104—7 R **2 Claims**

1. A track shifting device having a rigid load supporting frame, track shifting means mounted on said frame for shifting the track, a stop device on said frame in the path of movement of the track being shifted by said track shifting means for limiting the shifting of said track, and a pressure sensing means positioned adjacent said stop device for being engaged by the track when said shifted track is engaged with said stop device to sense a shifting force exerted on the rail by said track shifting means after contact with said stop device which shifting force has a magnitude greater than a predetermined value and to generate a signal only after the rail has been brought into



firm contact with the stop device, said pressure sensing means being connected to said track shifting means for controlling the operation of said track shifting means to limit the shifting force applied to the track in response to said signal, whereby the rail is always shifted to a predetermined shifted position in which it is in firm contact with said stop device.

4,127,070

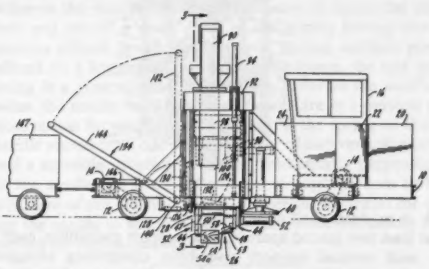
APPARATUS FOR REMOVING TIES UNDER RAILROAD TRACK

Andrew M. Dieringer, Waterford, and Ervin M. Sheperd, Milwaukee, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Division of Ser. No. 711,804, Aug. 5, 1976, Pat. No. 4,047,280, which is a continuation of Ser. No. 452,007, Mar. 18, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 812,709

Int. Cl.² E01B *29/10*

U.S. Cl. 104—9 **43 Claims**



1. In a machine for removing ties in one piece from under railroad track so as to disturb the level of the track the least, a frame adapted to be moved along the track, a wood-removing device on the frame constructed to remove the wood from the tops of the ties in areas between the rails and on one end thereof down to a level below the bottoms of the rails and above the bottoms of the tie plates, and power means on the frame for moving the tie laterally in a direction toward the other end so as to remove it from under the rails.

4,127,071

RAILWAY CAR SHIPPING SUPPORT STRUCTURE

Ronald J. Thomaswick, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1975, Ser. No. 634,688

Int. Cl.² B60P *7/10*; B61D *3/08, 3/16, 45/00*

U.S. Cl. 105—367 **14 Claims**

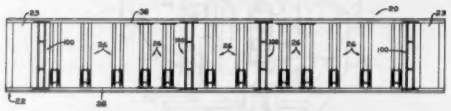
1. In a railcar for shipping articles wherein the railcar is of

the type having a flat bed supported on a pair of spaced trucks, the improvement comprising:

a pair of rigid longitudinal members;

means for securely mounting said longitudinal members on the flat bed of the railcar to maintain said longitudinal members in spaced relation to one another;

a plurality of lateral runners movable in a longitudinal direction between said pair of longitudinal members each of said lateral runners including a pair of members spaced from one another;



means for detachably securing said plurality of lateral runners to said longitudinal members to provide a supporting surface spaced above the flat bed of the railcar;

said pair of longitudinal members prevent lateral motion of said plurality of lateral runners;

a stanchion mounted on and slidable on said spaced members of selected ones of said plurality of lateral runners; and

means for detachably securing said stanchion in a predetermined position on its respective lateral runner to provide a vertical supporting surface for the articles to be shipped.

4,127,072

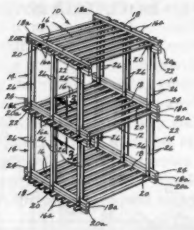
MODULAR SHELF

Waleigh J. LePon, 217 S. Highland, Ames, Iowa 50010

Filed Aug. 15, 1977, Ser. No. 824,718

Int. Cl.[2] A47B *45/00*

U.S. Cl. 108—111 **6 Claims**



1. A modular shelf comprising:

at least two spaced apart vertical support assemblies, each of said vertical support assemblies comprising elongated upper and lower horizontal members spaced vertically apart from one another, a first pair of vertical members spaced apart from one another and embracing said upper and lower horizontal members therebetween, a second pair of spaced apart vertical members embracing said upper and lower horizontal members therebetween, said upper horizontal member being operatively secured to said first and second pairs of members at a point spaced downwardly from the upper ends of said vertical members so as to form a U-shaped channel with said upper ends of said vertical members, said lower horizontal member being operatively secured to said first and second pairs of vertical members so as to form an inverted U-shaped channel with said lower ends of said vertical members, said first pair of vertical members being spaced horizontally from said second pair of vertical members so as to combine with said upper and lower horizontal members to create a rectangular configuration,

an upper horizontal support assembly extending between said spaced apart vertical support assemblies, said upper horizontal support assembly having two downwardly presented horizontal ribs, each of which is in registered alignment with one of said horizontal members of said vertical support assemblies, said downwardly presented ribs being slidably retentively fitted within said U-shaped channels of said vertical support assemblies;

a lower horizontal support assembly extending between said spaced apart vertical assemblies, said lower horizontal support assembly having upwardly presented horizontal ribs, each of which is in registered alignment below one of said lower horizontal members of said vertical support assemblies, said upwardly presented ribs being slidably retentively embraced within said inverted U-shaped channels of said vertical support assemblies,

said upper and lower horizontal assemblies each having a plurality of elongated slats extending transversely to said ribs, said horizontal ribs being secured to said slats at points spaced inwardly from the opposite ends of said slats, all of said slats being spaced inwardly from the opposite ends of said horizontal ribs.

4,127,073

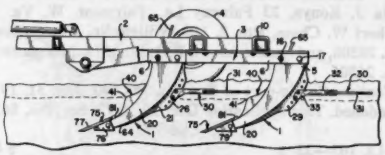
SUBSOIL TILLAGE TOOTH

Calvin B. Blair, Box 97, Barnard, Kans. 67418

Filed Jun. 13, 1977, Ser. No. 805,635

Int. Cl.[2] A01B *13/08*

U.S. Cl. 111—7 **7 Claims**



1. An improved subsoil plow assembly for mounting to a drawn tillage tool frame, said subsoil plow assembly comprising:

(a) an elongate shank member adapted to extend into the earth and having an upper mounting portion and a downwardly extending, soil-splitting leading edge merging smoothly into a forwardly curving leading edge, said forwardly curving leading edge terminating in an earth breaking tip extending forwardly of said downwardly extending leading edge;

(b) a vertically oriented arcuate cusp spaced rearwardly of said tip and extended forwardly from said downwardly extending leading edge, said cusp beng positioned above and substantially behind said tip so as to vertically divergingly distribute earth broken by said tip; said cusp having upper and lower edges diverging from each other substantially less than 180° forming a projecting apex positioned generally midway between said tip and said upper mounting portion and generally at the demarcation of the topsoil from the subsoil, said cusp upper edge extending substantially horizontally, rearwardly and upwardly from said apex and blending into said downwardly extending leading edge, said cusp lower edge extending substantially downwardly and forwardly from said apex and blending into said forwardly curving leading edge; and

(c) means securing said upper mounting portion to said frame for drawing thereof.

4,127,074

SOIL CULTIVATING IMPLEMENT

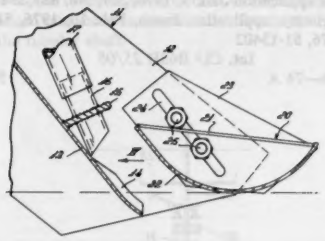
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Feb. 23, 1977, Ser. No. 771,120

Claims priority, application Netherlands, Feb. 25, 1976, 7601915

Int. Cl.[2] A01C *5/00*

U.S. Cl. 111—85 20 Claims



1. A soil cultivating and material delivery implement comprising a frame and cultivator rotor means mounted on said frame, driving means connnected to rotate said rotor means about a substantially horizontal axis, a hood pivoted to said implement and said hood extending rearwardly and down towards the ground, the lower portion of said hood being a configured guide member that furrows the ground worked by said rotor means, material delivery means comprising a hopper positioned above said guide member and a plurality of ducts extending downwardly to delivery openings located adjacent lower extensions of said guide member said ducts being supported on said hood, a ground engaging levelling member being adjustably secured to side plates of said hood and a front surface of said levelling member being located to the rear, adjacent said openings to protect same from clogging by soil.

4,127,075

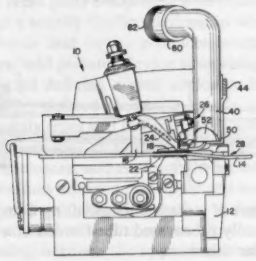
SUCTION DEVICE FOR SEWING MACHINES

Maximilian Adamski, Jr., Wheeling, and John A. Kuhn, Rolling Meadows, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,526

Int. Cl.[2] D05B *37/04*

U.S. Cl. 112—122 4 Claims



1. In combination with a sewing machine having a stitch forming instrumentality, a feed mechanism for advancing a workpiece to said stitch forming instrumentality, a work guide means arranged in front of said stitch forming instrumentality for guiding said workpiece along a predetermined line, a work support means, a trimming mechanism means adapted to trim an edge portion of said workpiece as it is fed through said machine and an apparatus for removing said trimmed edge, said apparatus comprising:

a tubular member having an inlet end positioned above said work support means at a generally perpendicular angle thereto proximate said work guide means; and

means for producing a suction at the outlet end of said tubular member means whereby the trimmed edge is drawn upwardly and a force is exerted on said workpiece in the area of the edge guide in such a manner so as to aid said guide in presenting said workpiece to the stitch forming instrumentality.

4,127,076

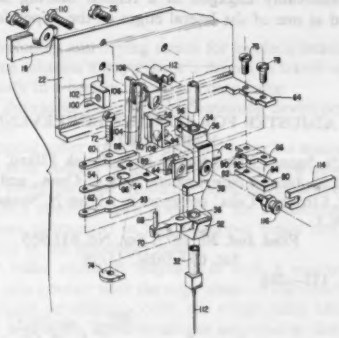
NEEDLE BAR FRAME FOR A SEWING MACHINE

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,085

Int. Cl.[2] D05B *3/02*

U.S. Cl. 112—158 R 6 Claims



1. In a sewing machine, the combination comprising a needle bar having a sewing needle at the lower end thereof, a frame wherein the needle bar may reciprocate to move the needle into and out of a work piece, a leaf spring having one end portion affixed in the machine and having another portion affixed to a lower end portion of said frame, the leaf spring being in a plane substantially perpendicular to the needle bar when the needle bar and sewing needle are in a vertical position, means for oscillating the frame on the spring so that the needle moves from one side to another of said vertical position, and a movable coupling extending substantially perpendicular to the needle bar frame, connected at opposite ends to fixed structure of the machine and to the needle bar frame for causing the needle to follow a curved path while the needle bar is moved by the oscillating means.

4,127,077

PORTABLE SEWING MACHINE

Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Jun. 17, 1977, Ser. No. 807,722

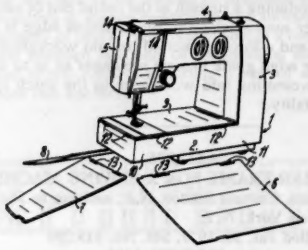
Claims priority, application Switzerland, Jun. 30, 1976, 8340/76; Feb. 8, 1977, 1474/77; Apr. 15, 1977, 4673/77; Apr. 15, 1977, 4674/77

Int. Cl.[2] D05B *75/06*

U.S. Cl. 112—258 14 Claims

1. In a portable sewing machine comprising a frame formed of a base, a column, an upper arm, a head and flaps hinged to the front and lateral edges of the upper face of the base, the improvement comprising hinge means detachably hinging said flaps to said edges of the upper face of the base, a part of the base adjacent its free end being in overhanging relationship to the other part of said base adjacent said column to provide a free arm when said flaps are detached, a bearing mounted at each of the lateral edges of the upper face of said base parallel

to said edges and adjacent said column, an eyelet removably mounted at each of the lateral edges of the upper face of the base adjacent its front end, and two lateral flaps each having



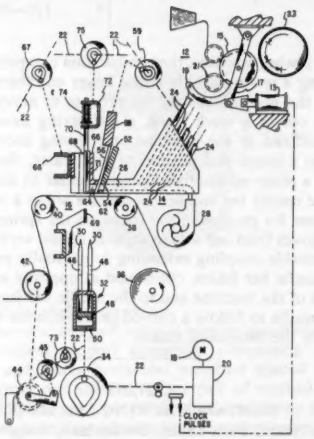
pivots fixed at the ends of a lower edge thereof, said pivots being removably engaged in a related bearing and eyelet mounted at one of the lateral edges of the upper face of the base.

4,127,078

YARN ADJUSTER FOR CONTROLLING EVENNESS OF YARN TUFTS

Abram N. Spanel, Princeton, N.J.; P. Frank Eiland, Stamford; David R. Jacobs, New Canaan, both of Conn., and David N. Buell, Littleton, Colo., assignors to Abram N. Spanel, Princeton, N.J.

Filed Jun. 30, 1977, Ser. No. 811,955
Int. Cl.[2] D05C *15/16*
U.S. Cl. 112—266 **29 Claims**



1. Tufting apparatus or the like including:
yarn-applying means for applying yarn to a backing layer wherein the improvement comprises a means for positioning yarn in a loaded condition in said yarn-applying means which comprises a yarn adjuster to position yarn in said yarn-applying means by causing at least a portion of the yarn to be drawn back.

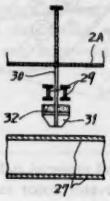
22. A method of applying yarn bits to a backing layer comprising the steps of:
pneumatically feeding yarn to bit-applying elements;
adjusting said yarn a predetermined amount to control placement of the yarn in said bit-applying elements by causing at least a portion of the yarn to move in a variant direction;
severing said yarn into yarn bits when loaded in said bit-applying elements; and
applying the severed yarn bits to the backing layer.

4,127,079

SUPPORT DEVICE FOR SHIP-CARRIED INDEPENDENT TANK

Takanori Ito, Osaka, Japan, assignor to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Division of Ser. No. 763,005, Jan. 27, 1977, Pat. No. 4,086,864.
This application Jan. 5, 1978, Ser. No. 867,354
Claims priority, application Japan, Feb. 10, 1976, 51-13401; Feb. 10, 1976, 51-13402
Int. Cl.[2] B63B *25/08*
U.S. Cl. 114—74 A **5 Claims**



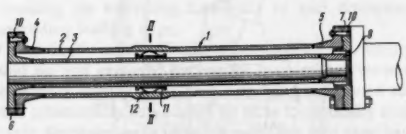
1. A support device for mounting an independent tank in the hold of a ship wherein:
said independent tank includes a bottom plate forming a first support member horizontally secured to the tank;
a plate in said hold forming a second support member;
tank supporting means interposed between said first and second support members;
a receiving member carried by the ship structure;
an anti-floating member provided on and projecting from said first support member through said receiving member without touching the latter member; and
an engagement section on the free end of said anti-floating member so as to engage said receiving member when the tank tends to float up.

4,127,080

TUBULAR SHAFT OF A MARINE LINE SHAFTING

Rostislav I. Lakiza, ulitsa L. Tolstogo, 20, kv. 14, and Viktor I. Podbeltsev, ulitsa Bolshaya Morskaya, 38, kv. 4, both of Sevastopol, U.S.S.R.

Filed Mar. 8, 1977, Ser. No. 775,594
Int. Cl.[2] B63H *23/34*
U.S. Cl. 115—76 **5 Claims**



1. A tubular shaft of a marine line shafting comprising:
an inner torsionally prestressed tube formed of a plurality of coaxial tubular members;
an outer torsionally prestressed tube coaxial with and spaced from said inner tube and being formed of a plurality of coaxial tubular members, the torsional prestress in said outer tube being equal to and opposing the torsional prestress in said inner tube;
flanges connected to first respective ends of each of said tubes and to each other for interconnecting said tubes and for forming an extension of the tubular shaft;
interconnecting means for interconnecting the other respec-

tive ends of each of said tubes and for keeping said tubes torsionally prestressed, said tubes being torsionally prestressed by rotating said inner tube in a first direction before said interconnecting means interconnects said other respective ends, said interconnecting means including a plurality of splines, said splines being connected to ends of said tubular members, the ends of splines connected to the tubular members forming the inner tube being connected in such manner that the ends of the tubular members are free to travel axially; and

elastic support means positioned in an annular space defined between said inner and outer tubes for damping vibrations of the tubular shaft.

4,127,081

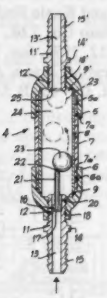
JET RESONATOR PULSATOR

George Brigliadoro, Wanaque, N.J., and Herman H. Feller, Valley Stream, N.Y., assignors to Rodex International, Ltd., Valley Stream, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,386

Int. Cl.[2] G08B *13/00*

U.S. Cl. 116—22 A **10 Claims**



1. In a device for producing sound vibrations of a frequency effective to repel pests comprising a jet resonator and a pulsator device in a serially fluidic relationship with said jet resonator and wherein said device produces intermittent ultrasonic sound waves, said pulsator device comprising in combination: structure means defining a total enclosure having upper and lower openings defined therein, a nozzle projecting a fluid stream upwardly from said lower opening and spaced from the walls of said enclosure, an element substantially loosely located within said enclosure, said enclosure being substantially free of other obstructions between said upper and lower openings and said enclosure being shaped such that the space circumscribingly adjacent each of said upper and lower openings and the space extending between the upper and lower openings being of greater cross-section than said element, said element having a cross-section greater than one-half of said enclosure and being of predetermined mass such that when said fluid is directed onto the mass of said element causing said element to drop downwardly after being tossed upwardly by the fluid stream from said nozzle thereby producing said pulsating fluid stream exiting through the upper opening, whereby an excessive fluid pressure in said enclosure space will cause said element to temporarily sealingly engage said upper opening.

4,127,082

WIPER ROLLER FOR DRYING A WET SHEET IN A COPYING MACHINE

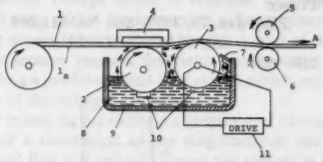
Nobuo Kawabata, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 24, 1976, Ser. No. 726,232

Claims priority, application Japan, Sep. 26, 1975, 50-117971; Jan. 20, 1976, 51-6437

Int. Cl.[2] G03G *15/10*

U.S. Cl. 118—652 **25 Claims**



1. A developing and drying means for an electrostatic copying machine wherein a copy sheet is driven to travel at a constant velocity in a certain direction comprising:

a liquid developer reservoir for containing developer liquid therein;

a developing roller rotatably installed in such a manner as to come into contact with the copy sheet, the developing roller being disposed within the liquid developer reservoir in such a manner that a portion of the developing roller becomes submerged in the developer liquid during the rotation of the developer roller;

a wiper roller rotatably disposed in such a manner as to come into contact with the copy sheet on the downstream side of the developing roller, the wiper roller being provided within the liquid developer reservoir so that only a portion of the wiper roller becomes submerged in developing liquid during the rotation of the wiper roller;

a driving means for rotating the wiper roller at a constant velocity in the counter direction to the travelling direction of the wet sheet; and

a cleaning means disposed to come into contact with the wiper roller in order to clean the wiper roller during the rotation thereof.

4,127,083

DEVELOPER SEALING DEVICE FOR XEROGRAPHIC COPYING MACHINE

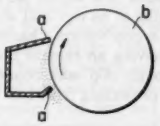
Shinichi Sesoko, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1977, Ser. No. 852,639

Claims priority, application Japan, Jan. 27, 1977, 52/7237

Int. Cl.[2] G03G *21/00*

U.S. Cl. 118—653 **4 Claims**



1. In a xerographic copying machine of the type having a rotatable photosensitive member and cleaning and developing units in close proximity to said photosensitive member, a sealing device for sealing the gap between the photosensitive member and the housings of said cleaning and developing units, said sealing device comprising a membrane sealing member attached at one end to a respective one of said housings, the other end of said membrane sealing member resiliently contacting the periphery of said photosensitive member when said

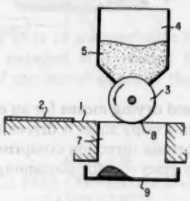
photosensitive member is at rest, said sealing member being positioned at a shallow angle of contact measured from a line parallel to the tangent to the periphery of said photosensitive member and being sufficiently flexible that air entrained by the rotation of the photosensitive member causes said sealing member to be floated from the surface of said photosensitive member.

4,127,084

IMAGE SUPPORT FOR DRY DEVELOPMENT DEVICE

Pham K. Quang, Dieppe, France, assignor to La Cellophane, Paris, France

Filed Jun. 29, 1977, Ser. No. 811,269
Int. Cl.[2] G03G *15/09*
U.S. Cl. 118—657 **6 Claims**



1. A development device for a reproduction machine which produces an image on an image support comprising:
- a rotating magnetic brush;
- means for rotating the brush and means for loading the brush with powder for development of latent images of electrostatic charges;
- means for delivering an image support across said magnetic brush in a direction concurrent with the rotary motion of said brush including
- a flat planar guide surface having a substantially rectangular opening positioned directly under said magnetic brush, said rectangular opening having long side edges positioned parallel to the axis of rotation of said magnetic brush and generally coextensive with the length of the brush; and
- two groups of parallel spaced, nonmagnetic wires of antistatic material stretched across said opening in substantially coplanar relationship with said guide surface, the groups arranged to converge toward the center of said brush.

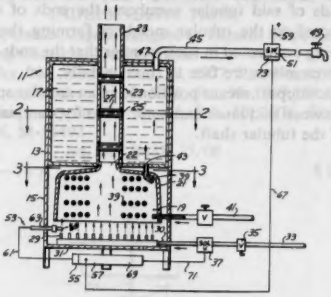
4,127,085

AUTOMATIC HOT WATER HEATER

Wilfred L. Katz, and Donald J. Katz, both of 27036 John R St., Madison Heights, Mich. 48071

Filed Oct. 31, 1977, Ser. No. 846,796
Int. Cl.[2] F23N *1/08*; F22B *9/04*
U.S. Cl. 122—18 **4 Claims**

1. In an automatic water heater having an insulated casing, a support base, a hot water tank within the upper portion of said casing, having an outlet at its top wall and a hot water intake in its bottom wall, a combustion chamber within said base including a bonnet having an exhaust outlet, and a flue pipe axially disposed through said tank connected to said bonnet outlet, with one end projecting from said casing; the improvement comprising:
- a cast iron gas burner within and supported on said base having a gas inlet;
- a series of spirally arranged continuous copper pipe coils nested within and across the upper area of said combustion chamber above said burner, having a cold-water inlet at said base and an outlet connected to said hot water intake;
- a hot water delivery pipe at one end connected to the tank outlet and having at least one water faucet;
- an electronic igniter including a spark plug extending into said combustion chamber and including an electrical circuit connected to a power source with power means for intermittently activating said igniter;
- a gas delivery pipe connected to said burner inlet and including a normally closed solenoid controlled gas valve;



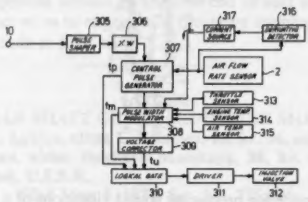
- and a normally closed water pressure switch on said hot water delivery pipe connected into said circuit and connected to said solenoid controlled gas valve; whereby opening of a faucet closes said switch to open said gas valve and momentarily energize said igniter.

4,127,086

FUEL INJECTION CONTROL SYSTEM

Susumu Harada, Oobu, and Kunio Endo, Anzyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 12, 1976, Ser. No. 713,833
Claims priority, application Japan, Aug. 25, 1975, 50-102782
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EL **5 Claims**



1. In a fuel injection system for internal combustion engines, said system including electromagnetic injection valves, pulse generator means for generating valve control pulses and means for transducing engine rpm and air flow rate into electrical signals fed to said pulse generator means, the improvement comprising:
- said means for transducing air flow rate includes a baffle plate located in the induction tube of the engine, and an electrical transducer associated with said baffle plate for generating a voltage related to the position of said baffle plate;
- derivative detector means connected to receive said voltage from said air flow rate transducer means, for generating a correcting current whose magnitude varies directly with a negative rate of change of said air flow rate but is unaffected by a positive rate of change of said air flow rate; and
- a pulse width modulator circuit for extending the duration of said control pulses in proportion to said correcting current; whereby the supply of fuel to the engine is increased temporarily during decreases in the air flow rate.

4,127,087
ELECTRONIC DRIVE SIGNAL DISTRIBUTION ARRANGEMENT FOR A FUEL INJECTION SYSTEM

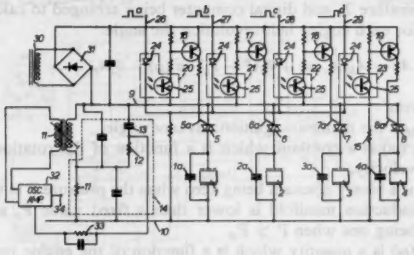
Francis J. Caves, Brentwood, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Sep. 15, 1976, Ser. No. 723,669

Claims priority, application United Kingdom, Sep. 19, 1975, 38471/75

Int. Cl.[2] F02M *63/00*

U.S. Cl. 123—32 AE **4 Claims**



1. An electronic drive signal distribution arrangement for use in an ultrasonic fuel supply system for an internal combustion engine, said engine adapted to produce control pulses dependent on engine operating conditions, comprising:

a plurality of piezo-electric transducers each adapted to be coupled with a fuel injection nozzle for supplying fuel to the internal combustion engine;

an oscillator for producing an ultrasonic signal for driving the transducers;

a plurality of triacs, each triac associated with a separate transducer;

means for connecting said triacs with said oscillator so that signal bursts from the oscillator are fed to the transducers via the triacs;

opto-coupler means for controlling the conduction of said triacs in dependence upon the control pulses; and

a plurality of capacitors, each capacitor being shunted with a particular transducer, said capacitors chosen so that the capacitance presented to each triac is substantially the same.

4,127,088
CLOSED-LOOP EMISSION CONTROL APPARATUS FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES HAVING A PLURALITY OF EXHAUST SYSTEMS

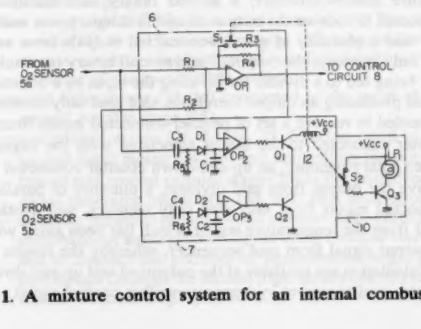
Mitsuhiko Ezoe, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Dec. 20, 1976, Ser. No. 752,147

Claims priority, application Japan, Dec. 25, 1975, 50-154098

Int. Cl.[2] F02B *3/08*; F02M *7/12*; F01N *3/08*

U.S. Cl. 123—32 EE **7 Claims**



1. A mixture control system for an internal combustion engine having first and second banks of cylinders, first and second exhaust systems connected for emission of the gases from the cylinders of the first and second banks respectively, and first and second air-fuel supplying means for supplying air and fuel to said cylinders of the first and second banks in a variable ratio in response to a control signal, comprising:

first and second exhaust gas sensors disposed in said first and second exhaust systems respectively to provide an output representative of the concentration of a predetermined constituent gas of the emissions in the respective exhaust systems, said output varying in amplitude between first and second voltage levels in response to variations of air-fuel ratio within the respective exhaust system;

detecting means for detecting when the output of either one of said sensors remains invariable for a period of time exceeding a predetermined time period which represents a failure of the exhaust gas sensor; and

amplifier means for providing a control signal having a mean value of a summation of the magnitude of said outputs from said first and second exhaust gas sensors in response to the absence of an output from said detecting means and for varying said control signal to a value which corresponds to a unity gain amplification of the output from the other one of said exhaust gas sensors in response to the presence of the output from said detecting means.

4,127,089
INTERNAL COMBUSTION ENGINE HAVING MAIN AND AUXILIARY COMBUSTION CHAMBERS

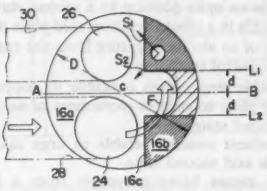
Saburo Tsutsumi, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan

Division of Ser. No. 532,395, Dec. 13, 1974, abandoned. This application Jun. 22, 1976, Ser. No. 698,501

Claims priority, application Japan, Dec. 22, 1973, 49-3636; Dec. 22, 1973, 49-3638

Int. Cl.[2] F02B *17/00, 19/00*

U.S. Cl. 123—75 B **3 Claims**



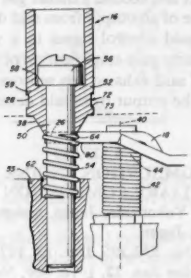
1. In a flame ignition type internal combustion engine having a cylinder block with a cylinder bore, a piston movable in said cylinder bore, a cylinder head positioned atop said cylinder block to form a wedge-shaped main combustion chamber and having an auxiliary combustion chamber in the vicinity of said main combustion chamber, said main combustion chamber consisting of first and second volume portions which are separated from each other by an imaginary plane which is parallel to the center axis of said cylinder bore, said imaginary plane containing a parting line by which an inner surface of said cylinder head constituting a roof portion of said main combustion chamber is separated into first and second inclined surfaces which respectively constitute roof portions of said first and second volume portions; intake and exhaust valves operatively positioned at said first inclined surface; and a flame passageway providing a fluid communication between said main combustion chamber and said auxiliary combustion chamber, the improvement comprising providing an outlet end of said flame passageway open to said second volume portion and located within one of two regions of substantially sector forms, said sector forms casting shadows on a plane perpendicular to the center axis of said cylinder bore, the outline of each

of said shadows being defined by a line cast on said plane from said parting line, one of two parallel lines which are drawn on said plane perpendicular to said center axis and are parallel to and spaced a predetermined distance from a center line which lies on said plane perpendicular to said center axis and passes through said center axis of said cyliner bore, and an arc described by a portion of the perimeter of said main combustion chamber, further in which said distance between each of said parallel lines and said center line is selected in a manner to satisfy the relation $d/D \geqq 0.15$ where d represents said distance and D represents the diameter of said cylinder bore.

4,127,090
CARBURETOR THROTTLE LOCK

Edward J. Pilatowicz, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed May 20, 1977, Ser. No. 798,859
Int. Cl.[2] F02D *11/02*
U.S. Cl. 123—98 **9 Claims**



1. An idle speed control mounted on the body of a carburetor for controlling the idle speed of an internal combustion engine, the carburetor having a throttle plate variably positionable from a first state wherein an operatively associated throttle valve is in an open position to a second state wherein said throttle valve is in a closed position, said plate thereby controlling passage of an air/fuel mixture from the carburetor to said engine, the control including

an adjustable stop means operable to cooperate with said throttle plate to restrict movement of said plate towards said second state,

a first resilient means operable to urge said throttle plate towards said second state,

said stop means being moveable from a first condition, wherein the throttle plate is in a normal operating condition with said associated throttle valve in a substantially closed position, to a releasable second condition wherein said throttle plate abuts the stop means in a fixed, fast idle condition wherein said associated throttle valve is in a partially open position, and

second resilient means for urging said stop means from said second condition to said first condition when the stop means is in said second condition.

4,127,091
INTERNAL COMBUSTION ENGINE IGNITION ELECTRONIC CONTROL DEVICE AND METHOD

Claude Léichlé, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 7, 1976, Ser. No. 730,320
Claims priority, application France, Oct. 9, 1975, 75 30902; Apr. 20, 1976, 76 11524
Int. Cl.[2] F02P *5/04*; G06F *7/38*
U.S. Cl. 123—117 D **10 Claims**

1. In a device for electronically controlling the ignition of an internal combustion engine, by delivering at the proper time a control signal for actuating the power member of an electronic ignition circuit of the type comprising at least one sensor disposed at fixed angular positions around an engine-driven rotary member and co-acting with reference means carried by said rotary member; a sensor for detecting the momentary pressure in the engine induction manifold and another sensor for detecting the temperature of the engine cooling fluid; a digital computer associated with a read only memory containing coefficients necessary for calculating the ignition advance angle A for each half-revolution of the crankshaft written as a function of the absolute pressure P_a in the induction manifold, the engine rotational velocity ω and the engine cooling fluid temperature T, said digital computer being arranged to calculate for each engine half-revolution the angle:

$$A_V = A_M A_o(\omega) + \delta_1(P - P_o) \cdot \alpha(\omega) - \delta_2 A_t$$

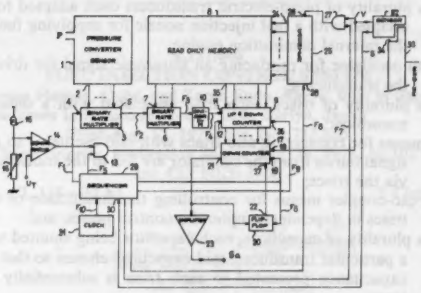
wherein:

A_M is the minimum ignition advance angle,

$A_o(\omega)$ is a constant which is a function of the rotational velocity,

δ_1 is a binary constant being zero when the pressure P in the induction manifold is lower than a fixed value P_o and being one when $P > P_o$,

$\alpha(\omega)$ is a quantity which is a function of the engine rotational velocity ω,



δ_2 is a constant having zero value when the temperature T of the cooling fluid exceeds a predetermined value T_o and a value one when $T < T_o$, and

A_t is a constant;

the electronic circuit further comprising a clock connected to drive a sequencer, wherein the improvement comprises a first binary rate multiplier connected to receive a first output of said sequencer and a plurality of parallel-connected outputs from a pressure sensor-converter; a second binary rate multiplier connected to receive the output of said first binary rate multiplier and a plurality of parallel-connected outputs from said read only memory, the output of said second binary rate multiplier being fed to a divider for dividing the input by a constant M and producing an output therefrom, said read only memory connected to receive a set of parallel-connected inputs from a counter connected to the sensor associated with the engine-driven rotary member; an up-and-down counter connected to receive the output from said dividers, a plurality of parallel-connected inputs from said read only memory, and another input from the temperature sensor which has been gated with an output signal from said sequencer, whereby the results of the calculation are available at the outputs of said up-and-down counter, and represent said power member control signal.

4,127,092

ADJUSTABLE TIMING ELECTRONIC INTERNAL COMBUSTION ENGINE IGNITION SWIT SYSTEM

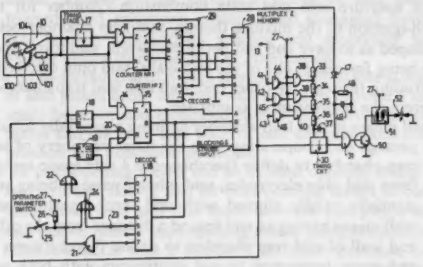
Jürgen Fresow, Schwieberdingen, and Bert Wurst, Möglingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 11, 1977, Ser. No. 795,742

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623613

Int. Cl.[2] F02P 5/04

U.S. Cl. 123—117 D 20 Claims



1. Adjustable timing injection system for an internal combustion engine having

means (10, 100, 101, 102) generating a plurality of signals representative of instantaneous angular position of the crankshaft of the engine;

timing means (17) receiving said plurality of signals and generating speed signals containing information regarding the speed of operation of the engine;

means (10, 100, 103, 104) generating an angle marker signal containing information regarding the angular position of the crankshaft of the engine with respect to a reference position (UDC);

an ignition coil (51) and at least one spark gap (52) connected to the secondary thereof to provide a spark at a predetermined ignition instant with respect to said reference position;

a controlled switch (50) connected in the primary circuit of the ignition coil (51) which, upon change of state, controls generation of an ignition event and hence a spark at the spark gap (52);

and means changing the iming of said ignition event with respect to the reference position comprising

a first counter stage (12) and a second counter stage (15),

the counter stages (12, 15) having a count capacity which is less than the number of signals developed by said instantaneous position signal generator means (10, 100, 101, 102) for any one ignition event after generation of said marker pulse, and said counters being automatically resettable upon reaching a predetermined count state so that, for any one ignition event, at least one counter stage will count through sequential count cycles;

first logic means (11) connected to the input of said first counter stage (12),

the speed signal being connected through the first logic means (11), to the first counter stage (12) to cause the first counter stage to count and provide a digital output representative of the speed of the engine;

second logic means (14, 18) connected to the input of said second counter stage (15),

count control means (21, 23; 24, 22, 20) connected to said second logic means (14, 18) and controlling the connection of said second counter stage (15) to the instantaneous signal generator means (10, 100, 101, 102) to control the counting sequence of said second counter stage (15) by the instantaneous angle position signal being counted thereby, and to connect the plurality of instantaneous angle position signals through the second logic means (14, 18) to the second counter stage (15) to cause the second counter stage to count through sequential count cycles after occurrence of said marker signal;

a memory stage (28) connected to the outputs of both said counter stages (12, 15) and having an output connected to control the controlled swith (50);

connection means (13) connecting the first counter stage (12) and said memory or storage stage (28),

the memory stage storing the count output of the first counter stage (12) during a first count cycle thereof and providing an output signal to the controlled switch (50) when, during a subsequent count cycle, the input from the second counter stage (15) has reached a predetermined relation to the count stored in the multiplex or memory stage;

and blocking means (19) connected to one of the counter stages (15) and to the memory stage (28) and inhibiting output of the memory stage (28) during the first count cycle of the respective counter means and while the count from the first counter stage (12) is being stored in the memory stage (28).

4,127,093

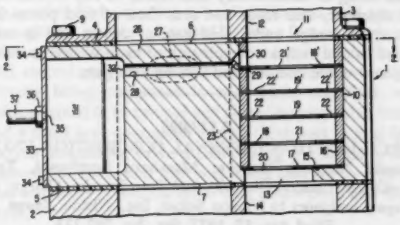
EXHAUST RECYCLE MIXER

Donald C. Pletts, Palm Beach Shores, Fla., assignor to Car-Bo-Tech Inc., Palm Beach Shores, Fla.

Filed Mar. 9, 1977, Ser. No. 775,834

Int. Cl.[2] F02M 25/06

U.S. Cl. 123—119 A 8 Claims



1. A charge-forming mixer for internal combustion engines having a carburetor, an intake member and an exhaust member, said mixer comprising

a body having

at least one fuel/air duct extended therethrough, said fuel-/air duct having

an inlet for receiving a fuel/air mixture from the carburetor and

an outlet for discharging a combustible mixture therefrom to the intake member,

means defining a staggered flow path for fluids passed enroute from said inlet to said outlet,

a settling chamber on a side of said body remote from said fuel/air duct,

a transfer duct extended in heat transfer relationship through a wall of said body, said duct including,

a transfer aperture communicating with said settling chamber and

a delivery aperture in communication with said fuel/air duct adjacent said inlet, and

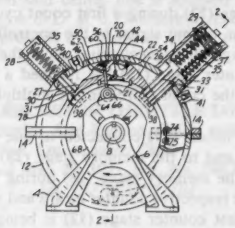
recycling means for recycling a portion of the exhaust gases from the exhaust member to the settling chamber, said recycling means including an unobstructed recycle path free of valves.

4,127,094

ENGINE

Leonard D. Barry, 19300 Pennington, Detroit, Mich. 48221

Continuation of Ser. No. 331,385, Feb. 12, 1973, abandoned.
This application Feb. 16, 1977, Ser. No. 769,000
Int. Cl.[2] F02B 53/00
U.S. Cl. 123—229 8 Claims



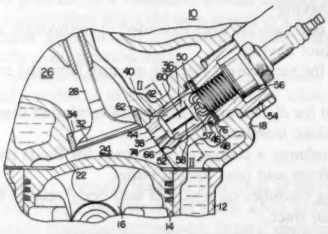
1. An engine having a piston housing having at least one chamber having a gate valve at each end, said valve having a gate which slides in and out along a cross sectional plane through the chamber to block or open the full cross-section of the chamber, means biasing the gate to close, a piston for traveling the chamber and through the gates when open, said piston having a front and rear cam face for opening the gate for said piston to pass, a gap along the length of said housing, a gap plate means substantially sealing said gap at least along the length of said chamber to move therealong and extending out therefrom to which said piston is secured, and means for injecting pressure between said rear face and a said gate to drive said piston, said chamber being of circular cross section of constant radius, said gate having concave inner end of said radius, said piston being of substantially said radius to slip fit and seal in said chamber, said front and rear face of said piston being tapered to wedge under said gate at center and in section curved to said radius on each side of each wedge to substantially seal while opening and closing said gate.

4,127,095

TORCH-IGNITION INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 13, 1977, Ser. No. 787,223
Claims priority, application Japan, Apr. 22, 1976, 51-45953
Int. Cl.[2] F02B 23/08
U.S. Cl. 123—30 D 10 Claims



1. In an improved torch-ignition internal combustion engine of the type which includes a cylinder block defining therein a cylinder bore, a piston reciprocally mounted in said cylinder bore, a cylinder head mounted on the top of said cylinder block to cooperate with said cylinder bore and said piston to define a main combustion chamber, said cylinder head defining therein an intake port connected to said main combustion chamber, an intake valve for controlling the communication between said main combustion chamber and said intake port, said main combustion chamber being supplied with a fresh charge of a lean air-fuel mixture through said intake port when said intake valve is open on an intake stroke of said engine, a trap chamber confined in said cylinder head and communicated with said main combustion chamber through a torch aperture, a part of the mixture charge to said main combustion chamber being introduced through said torch aperture into said trap chamber and retained therein during a compression stroke of said engine, and a spark plug having a set of electrodes disposed within said trap chamber at a point remote from said torch aperture to ignite the mixture in said trap chamber thereby to produce a torch running through said torch aperture into said main combustion chamber for the torch-ignition of the mixture therein, said trap chamber being so shaped as to have end and peripheral walls, said torch aperture being formed in one of the end walls, said plug electrodes protruding through the other end wall into said trap chamber, wherein the improvement comprises:

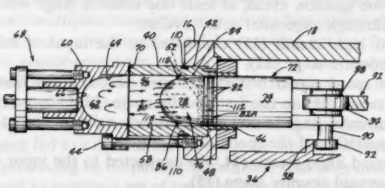
wall means in said trap chamber defining a generally tubular passage and cooperating with the inner periphery of said trap chamber to define therebetween a side space remote from said plug electrodes, said tubular passage being substantially axially aligned with said torch aperture, said wall means having an end spaced a distance from the other end wall of said trap chamber to define therebetween an end space connected to and continuous with both said tubular passage and said side space, said plug electrodes being disposed in said end space, the end of said side space adjacent to said one end wall of said trap chamber being communicated with the end of said tubular passage adjacent to said torch aperture, said part of the mixture charge being forced to flow from said torch aperture through said tubular passage towards said plug electrodes during the compression stroke of said engine to displace residual combustion gases away from said plug electrodes into said side space whereby said plug electrodes are exposed to and surrounded by said mixture charge part and the displaced residual combustion gases are retained in said side space until said plug electrodes ignite said mixture charge part.

4,127,096

INTERNAL COMBUSTION ENGINE

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Continuation-in-part of Ser. No. 488,781, Jul. 15, 1974, Pat. No. 3,967,599, and Ser. No. 576,198, May 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 488,782, Jul. 15, 1974, abandoned, said Ser. No. 488,781, is a continuation-in-part of Ser. No. 351,606, Apr. 16, 1973, Pat. No. 3,828,740, which is a continuation-in-part of Ser. No. 286,189, Sep. 5, 1972, abandoned. This application Apr. 19, 1976, Ser. No. 678,389
Int. Cl.[2] F01P 1/04
U.S. Cl. 123—41.56 20 Claims



1. An internal combustion engine, comprising,

an engine block means,

a cylinder sleeve mounted in said block,

a cylinder head on one end of said sleeve and forming a combustion chamber at said one end of said sleeve,

means for supplying a combustible fuel to said combustion chamber,

a piston slidably mounted in said sleeve and movable be-

tween a compression position adjacent said cylinder head and an expansion position away from said one end of said sleeve; said piston having a top portion, an elongated central side portion and a lower portion; sealing means on the lower portion of said piston which engages the interior wall surface of said sleeve, said elongated central side portion extending proportionately a substantial distance beyond said lower portion in a direction towards said cylinder head; said elongated central side portion extending far enough above the lower portion to shield from the direct heat of combustion the interior wall surface of said sleeve which is engaged by said sealing means during the initial portion of the expansion stroke of said piston towards said expansion position; said elongated central side portion substantially spacing and separating said sealing means from the heat of combustion;

the cross-sectional area of said elongated central side portion of said piston being less than said sleeve to provide a thin space between said elongated central side portion of said piston and the inner side walls of said sleeve in both compression and expansion positions;

an air inlet opening means and an exhaust opening means in said cylinder sleeve; said air inlet opening means in communication with said thin space between said piston and said sleeve, said air inlet opening means being in operative communication with a source of air under pressure, said air inlet opening means being in direct communication with said thin space when said piston is in its expansion position whereby a thin sheet of air will be supplied to said thin space and to the interior of said sleeve and said chamber to purge the exhaust gases therefrom outwardly through said exhaust opening means and to cool the interior wall surface of said sleeve engaged by said sealing means and to surround and cool the elongated central side portion of said piston to effect the cooling of said sealing means,

a drive shaft rotatably mounted in said block means and extending therefrom,

and means operatively connecting said piston to said drive shaft whereby combustion of fuel in said chamber causes said drive shaft to be rotated.

4,127,097

FUEL EVAPORATION CONTROL SYSTEM

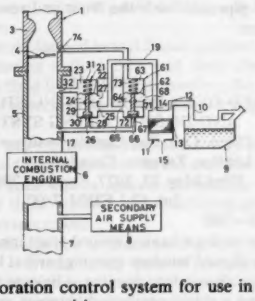
Masatami Takimoto, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 31, 1977, Ser. No. 801,797

Claims priority, application Japan, Dec. 15, 1976, 51-149807

Int. Cl.[2] F02M *69/00*

U.S. Cl. 123—136 **2 Claims**



1. A fuel evaporation control system for use in an internal combustion engine, comprising:

(a) a fuel tank;

(b) a charcoal canister connected to said fuel tank containing activated charcoal for adsorbing gasoline vapor from said fuel;

(c) a carburetor connected by an intake passage to an intake manifold and having a purge port in said intake passage;

(d) a throttle valve in said intake passageway located in close proximity to said purge port, said port being so located that said throttle valve will assume an upstream position or a downstream position relative to said purge port, depending on the open position of said throttle valve;

(e) a first vacuum responsive valve including means defining a first vacuum operating chamber and means defining a first atmospheric pressure chamber communicating with the atmosphere;

(f) a diaphragm separating said chambers, said first vacuum operating chamber including resilient means therein for maintaining said diaphragm in its neutral position and further including a port communicating with a port in said intake manifold at a position downstream from said throttle valve, said first atmospheric pressure chamber including a valve body coupled to said diaphragm and having a first port communicating with the atmosphere, a second port connected to said intake manifold further downstream from said throttle valve than said first vacuum operating chamber and adapted to be opened or closed by said valve body, and a third port connected to said charcoal canister, said first port being shut off by a partition wall from communication with said second and third ports;

(g) a second vacuum responsive valve including means defining a second vacuum operating chamber and means defining a second atmospheric pressure chamber communicating with the atmosphere; and

(h) a diaphragm separating said chambers, said second vacuum operating chamber including resilient means for maintaining said diaphragm in its neutral position and communicating with the purge port, said purge port being so located that said throttle valve will assume an upstream position or a downstream position relative to said purge port, depending on the open position of said throttle valve, said second atmospheric pressure chamber including a valve body coupled to said diaphragm, said second atmospheric pressure chamber having a first port communicating with the atmosphere, a second port connected to said second port in said first vacuum responsive valve, thereby being connected to said intake manifold, and being adapted to be opened and closed by said valve body, and a third port connected to said third port in said first vacuum responsive valve thereby being connected to said charcoal canister, said first port being shut off by a partition wall from communication with said second and third ports.

4,127,098

STARTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE, ESPECIALLY A CHAIN SAW ENGINE

Gerd Frers, Weinstadt-Grossheppach; Hans Nickel, Burgstetten, and Klaus Henning, Stuttgart, all of Fed. Rep. of Germany, assignors to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Mar. 21, 1977, Ser. No. 779,558

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 7608747[U]

Int. Cl.[2] F02N *1/00*

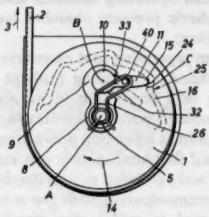
U.S. Cl. 123—185 BA **23 Claims**

1. A starting device for an internal combustion engine having a stationary bearing axle attached to the engine, a pulley rotatably mounted on the axle and adapted for accepting a starting rope wrapped thereabout, a recessed coupling attached to the drive shaft of the engine, coaxially surrounding the rope pulley in its recess and having a plurality of inwardly facing ratchet teeth, said starting device comprising:

an elongated pawl pivotably mounted on one side surface of the pulley, the pivot point being spaced radially from the rotational axis of the pulley;

a follower pin protruding from said pawl in the direction away from the pulley side surface at a point spaced from said pivot point; and

a spring member elastically engaging the distal end of the bearing axle to retain the pulley on the bearing axle, said spring member comprising two essentially parallel legs rigidly connected together at a point spaced from the



bearing axle and an elongated guide slot located between said legs for receiving said follower pin, whereby said spring member swivels the pawl radially outwardly into engagement with the ratchet teeth in response to rotation of the pulley.

4,127,099

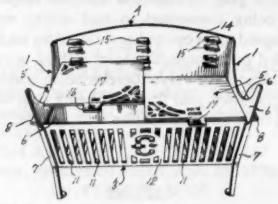
FIREPLACE FUEL STOVE AND GRILL DEVICE

Gustave Fortier, 1120 2nd Ave., Quebec, Canada

Filed May 25, 1977, Ser. No. 800,537

Int. Cl.[2] F24B *1/26*

U.S. Cl. 126—137 **1 Claim**



1. A fireplace log burning cooking stove comprising opposite end plate members, a bottom and opposite front and back plates extending length-wise between the opposite end plate members, and cooperatively forming therewith an upwardly opening fire holding recess, legs extending downwardly from said bottom plate member to maintain the same spaced above a supporting surface, said bottom and front plate members having elongated slots therethrough forming ventilation apertures, said end plate members and said back plate being imperforate, the upper edges of said end plates being concave to receive a log or logs and retain the same over and across said fire holding recess, said front and back plates downwardly converging longitudinally of the stove, said end plate members and said bottom, front and back plates being removably secured together, said back plate member including an upper imperforate portion projecting edgewise above said end plate members and said front plate and forming a series of pairs of superposed, spaced lugs on the inside face thereof, and further including a grill operatively and removably engageable edgewise in rest position between the lugs of anyone pair of said lugs for selective height adjustment of said grill over said fire holding recess.

4,127,100

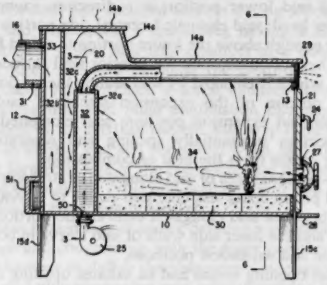
WOOD BURNING STOVE

Arthur L. Baker, R.D. #1, Lewisberry, Pa. 17339

Filed Nov. 30, 1977, Ser. No. 855,932

Int. Cl.[2] F24H *3/08*

U.S. Cl. 126—110 B **7 Claims**



1. A wood burning stove for providing heated air to a room or similar area, comprising:

an enclosed fire chamber including a generally horizontal floor at the bottom thereof, a forward portion of the floor comprising a hearth for receiving wood to be burned;

draft inlet means at the front of the fire chamber;

a flue at the rear of the fire chamber and near the top thereof;

an enclosed air chamber positioned between the rear of the hearth and the rear wall of the fire chamber and extending generally vertically from the bottom of the fire chamber to a point spaced from the top of the fire chamber, the air chamber having front and rear walls, a bottom and a top, the bottom of the air chamber communicating with the ambient air;

at least one air pipe extending generally horizontally within and along the top portion of the fire chamber, one end of the air pipe communicating with the interior of the air chamber at the top of the air chamber and the other end opening to the ambient air at the front of the stove; and

a generally vertical baffle plate positioned between and spaced from the air chamber and the rear wall of the fire chamber and extending the full width of the interior of the fire chamber, the baffle plate being joined at its top edge to the top of the fire chamber, the bottom edge of the baffle plate being spaced from the bottom of the fire chamber, whereby the flow of hot gases rising from a fire in the fire chamber will be such that the gases contact the surface of the air pipe and both the front and rear walls of the air chamber.

4,127,101

WINDOWED OVEN DOOR HAVING SHIELD RAISING AND DOOR LOCKING SYSTEM

Robert W. Tilton, Oakville, Canada, assignor to GSW Limited — GSW Limitee, Toronto, Canada

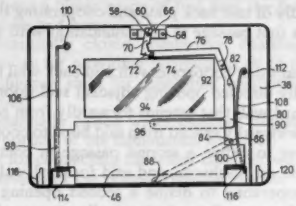
Filed May 23, 1977, Ser. No. 799,538

Int. Cl.[2] F23M *7/00*

U.S. Cl. 126—200 **29 Claims**

1. In an oven door having spaced apart inner and outer door panels with aligned window openings and at least one transparent pane in each window opening, a linkage system for raising and lowering a shield positioned between said door panels, a rotatable member mounted in said door above the window openings, said rotatable member being rotated during locking of the door shut on an oven, said linkage system being connected to said rotatable member whereby such rotational movement of said rotatable member is translated by said linkage system into raising said shield to a position which covers such pane in the outer door panel, said linkage system includ-

ing first and second link arms which are pivotally connected together and which extend as said shield is raised during the rotational movement of said rotatable member; said first and second link arms attaining a dead centre position when they are at their maximum extension and said shield is raised to its



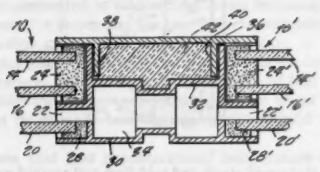
maximum height in the door, an over-centre stop means for stopping movement of said first and second link arms as they pass their dead centre position thereby preventing continued downward descent of said shield so that the shield is maintained in a window covering position while the door is locked.

4,127,102

HEAT ABSORBING WINDOW

Mark H. Berman, 144 Spring St., Passaic, N.J. 07055

Filed May 16, 1977, Ser. No. 797,020
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 **8 Claims**



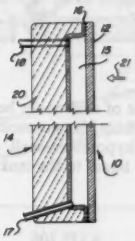
1. A heat absorbing window comprising:
a frame member;
a first window pane of heat absorbing material retained by said frame member on the exterior side of the window for receiving thereon solar energy, absorbing the heat therefrom, while transmitting the illumination therefrom;
a second window pane retained by said frame member on the interior side of the window for transmitting therethrough said illumination;
said first and second window panes defining a fluid chamber therebetween;
entry and exit ports formed in said frame member for respectively introducing a fluid into said fluid chamber and removing the fluid from said fluid chamber, the fluid being heated by the absorbed heat as it passes through the fluid chamber;
a third window pane formed of non-heat absorbing material, retained by said frame member on the exterior side of said first window pane and in spaced relationship therewith, said first and third window panes defining an insulation space therebetween; and
connecting manifolds for interconnecting the exit port of one window with the entry port of the next adjacent window, said connecting manifolds comprising a connector for spacing apart the adjacent windows and for forming a connection chamber, said connection chamber being in fluid flow communication between the fluid chambers of the adjacent windows, an exterior connecting brace for spacedly interconnecting the frame members of said adjacent windows, said connector and connecting brace defining a closed chamber therebetween, insulation material positioned in said closed chamber, and interconnecting members for insulatingly connecting the manifold to the adjacent windows.

4,127,103

HEAT COLLECTING AND TRANSFERRING APPARATUS AND SYSTEMS ADAPTED FOR USE WITH SOLAR ENERGY

Benno E. O. Klank, 5639 Jay Rd., Boulder, Colo. 80301, and James R. Jensen, Rte. 2, Box 507, Golden, Colo. 80401

Filed Dec. 21, 1976, Ser. No. 752,867
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **3 Claims**



1. A solar heat collector comprising:
a substantially flat, light transparent plate;
an enclosure formed with a flat peripheral edge around a depressed portion with said plate being bonded in sealing relation to said peripheral edge for overlying said depressed portion thereby defining an enclosed chamber, said enclosure including a solar ray heat absorbing layer as substantially all of the inner surface of said chamber, said enclosure having first and second ports therethrough on opposite sides of said chamber so that said first port is located at the upper portion of said chamber and said second port at the lower portion of said chamber when said enclosure is positioned for receiving solar rays generally normal to the flat outer surface of said plate, the lower portion of said chamber being sloped towards said second port when said enclosure is in said solar ray receiving position, said enclosure being of heat insulating material surrounding said chamber on all sides except the side formed by said plate and in backing relation to said heat absorbing layer;
a substantially light transparent liquid medium filling said chamber between said plate and said heat absorbing layer; and
means for transferring heat between said liquid medium and a remote location through said ports.

4,127,104

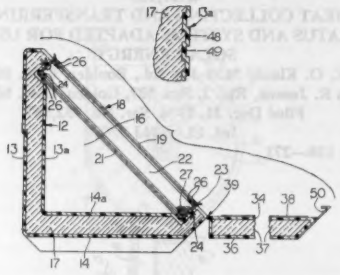
SOLAR HEATER FOR WATER AND THE LIKE

Michael E. Greene, Birmingham, Ala., assignor to Solar Works, Inc., Birmingham, Ala.

Filed May 9, 1977, Ser. No. 795,398
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 **2 Claims**

1. In a solar heater for water and the like,
(a) a tank for the liquid to be heated which is generally triangular in transverse cross section and has end walls, the inner surfaces of the walls of the tank comprising material having heat absorbing properties and in which the surface area of the said inner walls is increased by forming thereon a multiplicity of alternately raised and sunken areas,
(b) a wall forming the hypotenuse of the triangular shaped tank and constructed of spaced apart sheets of material providing an air space therebetween and effective to pass heat energy from the sun into the tank,

(c) an insulated cover for the hypotenuse wall associated with said wall and movable from a position covering said wall to positions exposing said wall to sunlight,



(d) the inner surface of said cover being energy reflecting, whereby energy from the sun striking said surface is reflected onto said hypotenuse wall, and

(e) means to supply liquid to the tank and remove the same therefrom.

4,127,105

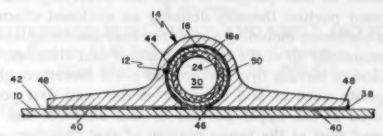
ISOTHERMAL PROCESS SOLAR COLLECTOR PANEL

Richard E. Watt, 6384 Rockhurst Dr., San Diego, Calif. 92120

Filed Aug. 4, 1977, Ser. No. 821,655

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **9 Claims**



1. An isothermal process solar collector panel, comprising

a collector means for absorbing radiant heat; and

a plurality of isothermal process heat pipes in an array over a surface of the collector means, wherein each heat pipe is closed at both ends and contains a thermodynamic working fluid for transferring heat energy from the collector means to a second fluid flowing through a manifold pipe for conducting said heat energy from the collector panel;

wherein the collector means has a broad uniformly flat surface area over which the heat pipes are arrayed; and further comprising

a plurality of thermal conductors for conducting heat energy from the collector means to the heat pipes, wherein each of the thermal conductors has broad flat surfaces in contact with the flat surface of the flat collector means on opposite sides of the heat pipe, and an inner surface in mating contact with most of the heat pipe; with the thickness of the thermal conductor increasing from the extreme ends of its broad surfaces toward its inner surface.

4,127,106

HOOD ASSEMBLY

Donald D. Jensen, 1141 Park Circle Dr., Fresno, Calif. 93727

Continuation-in-part of Ser. No. 614,473, Sep. 18, 1975, Pat. No. 4,043,319. This application Aug. 23, 1977, Ser. No. 827,099

Int. Cl.[2] F24C *15/08;* **F23J** *11/00*

U.S. Cl. 126—299 D **7 Claims**

1. In an enclosure having a substantially horizontal floor, a pair of spaced end walls a substantially vertical back plate extending between said end walls, a forwardly extending hood, a housing intermediately disposed between said back plate and hood, and a stack extending upwardly from said housing, the improvement for preventing minute air borne particles in said enclosure from escaping through an opening in the forward portion of the latter into the room in which said enclosure is situated, said improvement comprising:

a. single power driven blower means in said housing, said blower means having an air inlet and an air discharge;

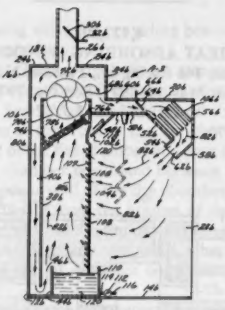
b. a back wall that extends downwardly from said air inlet forwardly of said back plate and cooperating therewith to define a first passage in communication with said air discharge;

c. first means that cooperate with said back wall to define an upwardly directed opening adjacent said floor;

d. a forward wall that extends forwardly from said air inlet and downwardly spaced from said hood to cooperate with the latter to define a second passage in communication with said air discharge, and said forward wall and hood also cooperating to define a second opening that is directed downwardly and rearwardly at an angle;

e. air borne particle removing means that extend across said air inlet; and

f. first adjustable damper means in said stack, said blower means when operating concurrently discharging pressurized air to said stack and said first and second passage, said pressurized air delivered to said first passage discharging from said first opening as a first high velocity air stream along the forward surface of said back plate to create a negative pressure towards which said minute air borne particles tend to move to become entrained with said first stream and be separated therefrom as said first stream flows through said removing means, said pressurized air discharging from said second opening as a downwardly and rearwardly directed second stream that tends to move said minute air borne particles not already entrained with said first air stream rearwardly to so become, said air inlet of said blower maintaining a negative air pressure above said removing means to encourage the flow of said first and second air streams therethrough, said first damper means regulating the magnitude of the rate of flow of air from said enclosure and the room surrounding the latter through said stack to the ambient atmosphere, and said first damper means when closed causing said blower means to recycle air to remove said minute air borne particles therefrom without removing air from a room in which said enclosure is situated.



4,127,107

AUXILIARY HEATING DEVICE FOR STANDARD HOT WATER TYPE HOME HEATING SYSTEMS

Edward L. Melgeorge, Star Rte. Box 234, Babbitt, Minn. 55706

Filed Nov. 15, 1976, Ser. No. 741,943

Int. Cl.[2] F24H *1/18*

U.S. Cl. 126—361 **8 Claims**

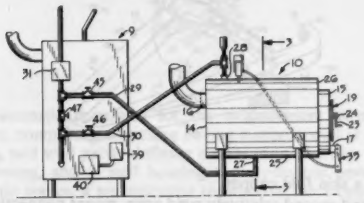
1. An auxiliary heating device for use in combination with a primary heating system of the hot water type including a furnace, a water circulation system, first means for sensing

when the water temperature in said water circulation system reaches a first predetermined temperature, and means connected to said first water temperature sensing means for increasing the rate of combustion in the furnace when the water temperature in the water circulation system falls below said first predetermined temperature, said auxiliary device being adapted to burn a lower grade of fuel than the furnace of the primary system and comprising:

(a) a substantially closed combustion chamber having a passageway for providing combustion air to the chamber and a chimney stack for exhausting combustion products therefrom;

(b) a substantially closed water chamber disposed about at least a portion of the combustion chamber;

(c) means for connecting the water chamber with the circulation system of the primary heating system;



(d) second means in fluid communication with said water chamber for sensing when the water temperature in said chamber equals or differs from a second predetermined temperature;

(e) means connected to said second water temperature sensing means for increasing the rate of fuel combustion in said combustion chamber when the temperature of water in the water chamber falls below said second predetermined temperature, and for decreasing the rate of fuel combustion when the temperature of water in the water chamber reaches or exceeds said second predetermined temperature;

(f) wherein said first predetermined temperature is below said second predetermined temperature; and

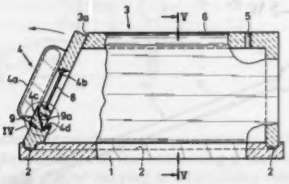
(g) means for supplying fuel to the combustion chamber.

4,127,108

BAKING APPLIANCE ADAPTED TO BE HEATED IN THE OVEN OF A COOKER

Alfred Krohe, Grafelfing, Fed. Rep. of Germany, assignor to Firma Carnovia Verrebanstall FL, Vaduz, Liechtenstein

Filed Apr. 6, 1977, Ser. No. 785,241
Int. Cl.[2] A47J *27/04, 27/10*
U.S. Cl. 126—369 **1 Claim**



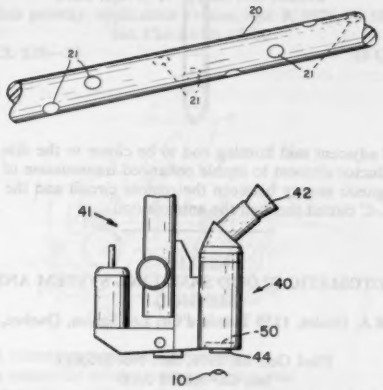
1. A baking appliance adapted for baking in an oven, comprising a flat rectangular base of refractory fire clay having a lower face and an upper face, said upper face being formed with a peripheral groove, a hood of refractory fire clay having a lower rim adapted to fit into said peripheral groove, said hood extending upward of said base and forming a bread receiving and baking chamber, said hood having a pair of end walls and a pair of side walls, one of said walls being slanted and having an opening therein, a lid for closing said opening, said slanted wall having a lower end portion provided with a closable opening for introduction of water and air into said appliance and an inspection window, said closable opening is a tilting closing plug having a drainage groove, said drainage groove opens into a trough within said baking chamber which extends downwards on both sides of said closable opening.

4,127,109

SYSTEM OF CONTROLLING ASTIGMATISM DURING CATARACT SURGERY

Michael E. Fourney, Malibu, and Ronald P. Jensen, Pasadena, both of Calif., assignors to Ronald P. Jensen, M.D., Inc., Glendale, Calif.

Filed Jun. 16, 1977, Ser. No. 807,197
Int. Cl.[2] A61F *09/00*
U.S. Cl. 128—1 R **6 Claims**



1. An improved system for controlling astigmatism during cataract surgery in which a microscope, having an eyepiece, a tube and an objective lens, is used, said improved system comprising:

a. a length of suture material adapted to close a corneal incision, said length of suture material being cylindrically shaped and having a plurality of parallel lines, which are equally spaced at very close distances in the range of 5,000 to 20,000 lines per inch, disposed orthogonally to the longitudinal axis on the cylindrical surface of said length of suture material; and

b. means for detecting and measuring optically the strain in said length of suture material in the range of 0.1 percent to 25.0 percent, said means being optically coupled to the microscope.

4,127,110

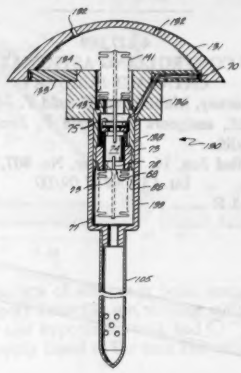
IMPLANTABLE PRESSURE TRANSDUCER

Leo A. Bullara, Glendora, Calif., assignor to Huntington Institute of Applied Medical Research, Pasadena, Calif.

Filed May 24, 1976, Ser. No. 689,169
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—2 P **13 Claims**

1. In a transducer adapted for implantation beneath the skin and having a resonant L-C circuit with capacitor and inductor elements, one of the elements being variable and driven by a mechanical force sensor whereby the circuit has a variable resonant frequency which is related to the magnitude of force sensed by the sensor, and the frequency can be determined without wired connection by a remote circuit, the transducer including a housing for supporting the circuit elements and force sensor, the housing having an end adapted to be positioned closer to the skin than the inductor element when the

transducer is implanted; the improvement comprising a coupling coil positioned adjacent and inductively coupled to the inductor element, and an antenna coil connected across and spaced from the coupling coil, the antenna coil being positioned adjacent said housing end to be closer to the skin than the inductor element to enable enhanced transmission of electromagnetic energy between the remote circuit and the resonant L-C circuit through the antenna coil.

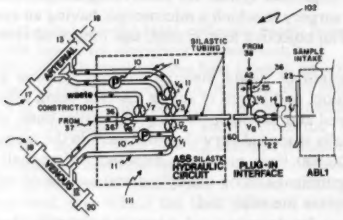


4,127,111

AUTOMATIC BLOOD SAMPLING SYSTEM AND METHOD

Roland A. Drolet, 1150 Toison d'Or, Les Saules, Quebec, Canada

Filed Oct. 26, 1976, Ser. No. 735,811
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—2 G **2 Claims**



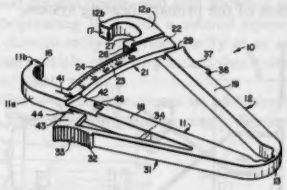
1. A system for automatic sampling of blood and for the automatic feeding of a measured volume of blood to an automatic blood analyser, comprising a tubing having means at both ends for communicating said tubing with two spaced points of a blood vessel of a patient to establish a partial bypass, a power-operated pump means to continuously circulate blood at a constant rate of flow through said tubing by extracting blood from and returning it to said blood vessel, a blood sample withdrawal tubing adapted to be connected at one end to said analyzer, a compressed fluid source connected to the other end of said withdrawal tubing, a branch line tubing interconnecting intermediate points of said partial bypass tubing and of said withdrawal tubing, a first electromagnetic valve in said branch line tubing, a second electromagnetic valve in said withdrawal tubing serially mounted intermediate said fluid source and said branch line, and an electric command circuit means electrically connected to said two valves and giving timed commands to said valves causing opening of said first valve for a predetermined time to allow discharge of a predetermined volume of blood through said branch line within said withdrawal tubing, while said second valve is closed, then causing closing of said first valve and subsequent opening of said second valve, whereby said fluid under pressure pushes into said analyzer the measured quantity of blood in said withdrawal tubing.

4,127,112

SKIN FOLD CALIPER

Hugh P. Sherlock, Palo Alto; Allan M. Golderg, Laguna Niguel; Werner W. Clupke, Burlingame, and George Brody, San Clemente, all of Calif., assignors to American Hospital Supply Corp., Evanston, Ill.

Filed Apr. 6, 1977, Ser. No. 785,130
Int. Cl.[2] A61B *5/10*
U.S. Cl. 128—2 S **8 Claims**



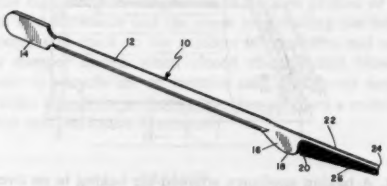
1. In a skin fold caliper:
first and second relatively rigid arms, means connecting one end of each of the first and second arms with respect to each other so that the other ends of said first and second arms can be moved between open and closed positions,
cooperative gauge means carried by said first and second arms for giving an indication of the spacing between the other ends of said first and second arms,
means carried by said first and second arms,
a spring-like member associated with said last named means,
said spring-like member having one end secured to one of said arms and having the other end free,
a cooperative gauge means carried by said spring-like member and said one arm,
registration arrows carried by said spring-like member and said one arm, and
the arrow carried by said spring-like member is carried by a flag and said one arm is provided with a slot adapted to receive said flag.

4,127,113

MULTIPLE SMEAR BRUSH

Theodore G. Nollan, Chula Vista, Calif., assignor to Pap Smear Center, Inc., San Diego, Calif.

Filed Dec. 15, 1977, Ser. No. 860,881
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—2 W **5 Claims**

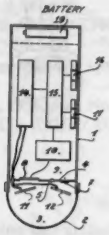


1. A multiple smear brush, comprising:
an elongated, substantially rigid stem having an enlarged handle at one end;
a brush at the other end of said stem, said brush including a thin flexible spine projecting from the stem and having a root end at the stem and a smoothly rounded tip;
and a longitudinal planar row of thin flexible bristles projecting from one side of said spine.

4,127,114
APPARATUS FOR THE AUTOMATIC MEASUREMENT OF THE ARTERIAL PRESSURE OF A PATIENT

Max Bretscher, Niederscherli, Switzerland, assignor to Carba S.A., Liebefeld, Switzerland

Filed Aug. 30, 1976, Ser. No. 719,587
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—2.05 N 3 Claims

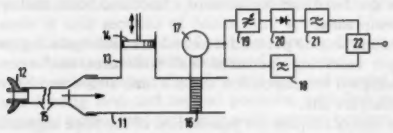


1. Automatic apparatus for the measurement of arterial pressure, comprising a housing having a supple wall at one of its ends, said wall partly defining a measuring chamber within said housing, and in said housing a piezoelectric emitter of ultrasonic waves, a piezoelectric receiver of the Doppler effect, a piezoelectric pressure detector, said emitter and receiver and detector all being spaced from said wall, a measuring and display circuit electrically connected to said pressure detector to display pressure in said chamber, said receiver controlling said display circuit, whereby when said wall is applied against the artery of a patient, the ultrasonic waves emitted by said piezoelectric emitter are reflected from said wall to said receiver and said display circuit displays the diastolic or systolic pressure of the artery to which said wall is applied, and means permitting a controlled leakage of air from said chamber.

4,127,115
MEDICAL APPARATUS FOR THE MEASUREMENT OF RESPIRATORY FLOW INDEPENDENT OF GASEOUS COMPOSITION

Manfred Franetzki, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 28, 1976, Ser. No. 700,504
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530474
Int. Cl.[2] A61B 5/08
U.S. Cl. 128—2.08 14 Claims

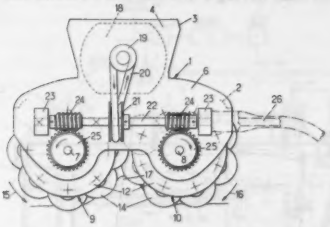


13. In medical apparatus for respiratory flow measurement, including a breathing tube for containing a fluid medium subject to respiratory flow varying at a breathing rate, and a flow measurement sensor accommodated in said breathing tube for coupling with the respiratory flow of the fluid medium in said breathing tube to control the supply of a respiratory flow signal as a function of such respiratory flow, said breathing tube having auxiliary means coupled with the fluid medium in said breathing tube for producing a supplementary flow component, supplementary means responsive to the supplementary flow component to supply a supplementary signal which is dependent on a parameter of said fluid medium which also affects the accuracy of said respiratory flow signal, and evaluation means operatively connected with said flow measurement sensor and responsive to said respiratory flow signal and to said supplementary signal for forming a quotient signal as a function of the quotient of said respiratory flow signal and said supplementary signal to provide a respiratory flow indication compensated for said parameter of the fluid medium substantially independently of the type of respiratory gas or gases making up said fluid medium, said auxiliary means comprising an alternating pressure pump coupled with the fluid medium and operable to provide a supplementary flow component in the form of a sinusoidal pulsation with a frequency substantially above the breathing frequency corresponding to said breathing rate.

4,127,116
MASSAGING APPARATUS

Henri Pannetier, 11, rue Philippe-le-Bel, 95 580 Andilly, France

Filed Apr. 5, 1977, Ser. No. 784,670
Claims priority, application France, Apr. 9, 1976, 76 10389
Int. Cl.[2] A61H 15/00
U.S. Cl. 128—57 13 Claims



1. A massaging apparatus comprising:

A. a means for driving said apparatus; and

B. two adjacent drums adapted to be driven by said driving means, said drums being offset from each other and adapted to rotate in opposite directions so that the tangential speeds of the adjacent drums are directed towards each other on the tissue engaging side thereof, each drum including:

(i) two flanges spaced apart from each other;

(ii) a plurality of shafts disposed between said two flanges and spaced at equal intervals about the circumference thereof; and

(iii) a plurality of equally spaced pads supported by said shafts, said pads being axially staggered from one shaft to another adjacent shaft, the angular positioning of the two drums being such that the pads of both the drums which file past facing each other are themselves staggered.

4,127,117
PORTABLE HYDROTHERAPY BATH ASSEMBLY

Samuel F. Peterson, Jr., Chicago, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Filed Jul. 14, 1977, Ser. No. 815,491
Int. Cl.[2] A61H 9/00
U.S. Cl. 128—66 10 Claims

1. An improved portable hydrotherapy bath assembly designed for mounting on the side wall of a conventional bathtub and for creating a relaxing, swirling or whirlpool effect in the water in the bathtub, the improved portable hydrotherapy bath assembly comprising:

a motor housing having an upper end and a lower end, and being adapted to be disposed on the outside of the bathtub adjacent to the side wall of the bathtub, with the upper end of the motor housing being positioned adjacent to the upper edge of the side wall of the bathtub;

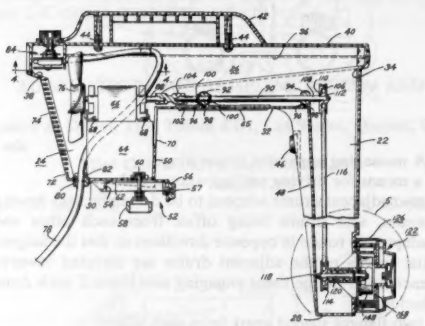
a pump housing having an upper end, a lower end and a longitudinal axis that extends between its ends and being

adapted to be disposed within the bathtub adjacent to the side wall of the bathtub, with the upper end of the pump housing being adapted to be disposed adjacent to the upper edge of the side wall of the bathtub and with the lower end of the pump housing being adapted to be immersed in the water in the bathtub;

an overhead support housing having a bottom wall, a first end, a second end and a longitudinal axis that extends between its ends and being adapted to be disposed so that its bottom wall rests on the upper edge of the side wall of the bathtub, with its first end being operatively connected with the upper end of the motor housing and with its second end being operatively connected with the upper end of the pump housing;

electric motor means mounted in the motor housing for operation therein and having a rotary motor output shaft, with the electric motor means being arranged within the motor housing so that the output shaft is adjacent to the first end of the overhead support housing and is substantially parallel to the longitudinal axis of the overhead support housing;

a second shaft having a first end and a second end and being



mounted for rotation within the overhead support housing so that its longitudinal axis is substantially parallel to the longitudinal axis of the overhead support housing, with the first end of the second shaft being disposed adjacent to the first end of the overhead support housing and with the second end of the second shaft being disposed adjacent to the second end of the overhead support housing;

means for interconnecting the output shaft of the electric motor means with the first end of the second shaft so that the second shaft is rotated by rotation of the output shaft;

a pumping chamber in the lower end of the pump housing and including a impeller means which may be rotated within and cooperate with the pumping chamber so as to draw water into the pumping chamber from the bathtub and so as to discharge water under pressure from the pumping chamber into the bathtub, the impeller means having a rotary drive shaft, with the axis of rotation of the drive shaft of the impeller means being substantially perpendicular to the longitudinal axis of the pump housing;

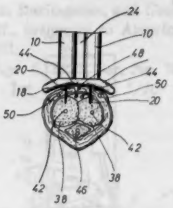
and belt drive means for interconnecting the second end of the second shaft and the drive shaft of the impeller means for causing the impeller means to be rotated within the pumping chamber.

4,127,118

METHOD OF EFFECTING AND ENHANCING AN ERECTION

Alvaro Latorre, 721 Cervantes, El Paso, Tex. 79922

Filed Mar. 16, 1977, Ser. No. 778,047
Int. Cl.[2] A61F *5/00*
U.S. Cl. 128—79 **11 Claims**



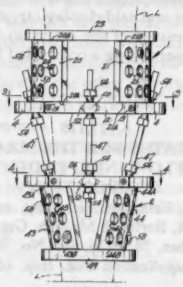
1. A method of effecting and enhancing an erection of the penis by injecting into the penis a predetermined amount of an appropriate vasodilator.

4,127,119

FRACTURE REDUCING AND JOINT IMMOBILIZING APPARATUS

Richard F. Kronner, Rte. 2, Box 583, Roseburg, Oreg. 97470

Continuation-in-part of Ser. No. 712,842, Aug. 9, 1976, abandoned. This application May 6, 1977, Ser. No. 794,417
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—92 A **10 Claims**



1. An orthopedic apparatus for the reduction and immobilizing of the distal end segments of a fractured bone, said apparatus comprising,

first and second pin holder assemblies each including pairs of pin receiving apertured wall structures, said assemblies adapted for disposition about a limb above and below the fracture site,

pin means adapted for penetration of the bone segments and supported by at least one of the wall structures of said pair of wall structures of the first and second pin holder assemblies, and

elongate connector assemblies coupling said pin holder assemblies in adjustable spaced relationship, said connector assemblies each including a threaded shaft, pairs of axially adjustable elements thereon, ball and sleeve components disposed intermediate each of said pair of elements, clamping members carried by and spaced about on each of said pin holder assemblies for universal adjustable and clamping engagement with said ball and sleeve components, said axially adjustable elements operable upon axial repositioning to move a ball and sleeve component and thereby enable incremental varying of the spaced relationship between said pin holder assemblies, momen-

tary release of said clamping members permitting alignment of the fracture ends by manual positioning of said pin holder assemblies, said axially adjustable elements thereafter adapted for advancement of a pin holder assembly and subsequent locked engagement with an intermediate ball and sleeve component for retention of the fracture ends in compression.

4,127,120

TORSO-BOARD STRAPS AND METHOD OF USING THE SAME

Lee C. Applegate, 7645 Sumter Hwy., Apt. 101E, Columbia, S.C. 29209

Filed Nov. 8, 1976, Ser. No. 739,616
Int. Cl.[2] A61G *1/00*
U.S. Cl. 128—134 **13 Claims**

1. A set of straps for use with a torso board having first and second openings, said second opening being near the hip on one side of an average person when said first opening is near the shoulder on the other said of said average person, said set of straps comprising:

(A) a first elongated flexible strap having first attaching means for adhering one end of said first strap to said board at said first opening and for preventing the other end of said first strap from moving beyond a predetermined maximum distance away from said first opening when said one end is adhered to said board;

(B) a second elongated flexible strap having second attaching means for adhering one end of said second strap to said board at said second opening and for preventing the other end of said second strap from moving beyond a predetermined maximum distance from said second opening when said one end of said second strap is adhered to said board at said second opening, said one end of said second strap including a section of loops connected to a section of hooks on the side of said section of hooks opposite the side with said hooks and at a point intermediate to longitudinal ends of said sections of hooks, said section of hooks in either longitudinal side of said point being free to move out of contact with said section of loops; and

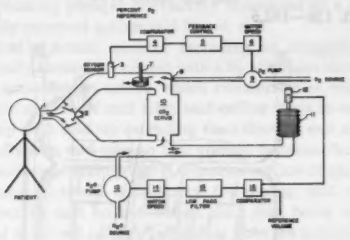
(C) connecting means coupled to said first and second straps and having first and second portions, said first portion forming part of said first strap and a second portion forming part of said second strap, for adjoining said other ends of said first and second straps together sufficiently tightly to prevent relative motion between said other ends when said first and second straps experience forces pulling them away from each other, said connecting means being capable of existing in a plurality of different connecting configurations of said first portion relative to said second portion, each of said connecting configurations adjoining said other ends togehter, said different connecting configurations differing from one another in total maximum distances along said adhered straps from said first opening to said second opening, said first attaching means being for adhering said one end of said first strap to said first opening without said first strap necessarily contacting any part of said second strap, said second attaching means being for adhering said one end of said second strap to said second opening without said second strap necessarily contacting any part of said first strap, and said second attaching means being capable of existing in a plurality of different attaching configurations, said second attaching means in each of said attaching configurations adhering said one end of said second strap to said board at said second opening, said attaching configurations differing from one another by establishing different predetermined maximum distances of said other end of said second strap from said second opening.

4,127,121

OXYGEN AND ANESTHESIA DELIVERY AND MONITORING DEVICE

Dwayne R. Westenskow, and Curtis C. Johnson, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Sep. 17, 1976, Ser. No. 724,194
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—142 R **7 Claims**



1. A closed, recirculating oxygen and anesthesia delivery circuit for monitoring and controlling rates of addition of oxygen and anesthesia gas in response to rates of oxygen consumption and anesthesia uptake, comprising:

a. a closed circuit having at least one inlet means for addition of oxygen and at least one inlet means for addition of anesthesia gas to said circuit and outlet means for connecting said circuit to a patient, said system being operable to preserve a closed system environment between said circuit and the patient's lungs;

b. first sensing means for detecting concentrations of oxygen within the closed circuit;

c. flow controlling means for maintaining a single direction of gas flow across said oxygen concentration sensing means;

d. first feedback means for comparing the detected oxygen concentration with a preset oxygen concentration indicator;

e. first servo means including a motor-speed regulated pump responsive to said first feedback means and operable to maintain oxygen concentrations at a safe value relative to the preset oxygen concentration by regulating addition of oxygen through one or more of said oxygen inlet means, said motor-speed regulated pump being coupled at said oxygen inlet means for controlling oxygen feed into said closed circuit;

f. second sensing means for detecting the concentration of the applied anesthesia gas within the closed system;

g. second feedback means for comparing the detected anesthesia gas concentration with a preset anesthesia concentration indicator;

h. second servo means including a motor-speed regulated pump responsive to said first feedback means and operable to maintain anesthesia concentrations at a safe value relative to the preset anesthesia concentration by regulating addition of anesthesia through one or more of said anesthesia inlet means, said motor-speed regulated pump being

coupled at said anesthesia inlet means for controlling anesthesia feed into said closed circuit;

i. means for reducing and maintaining CO_2 concentrations at safe levels within the closed system.

4,127,122
BREATHING APPARATUS

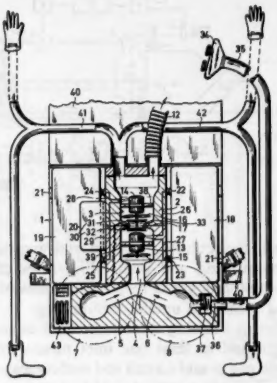
Manfred Kienhofer, Eggenstein-Leopoldshafen, Fed. Rep. of Germany, and Johann Pedrerol, Zurich, Switzerland, assignors to Gesellschaft für Kernforschung GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,468

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612877

Int. Cl.[2] A62B *7/00*

U.S. Cl. 128—142.5 **18 Claims**



1. A breathing apparatus for supplying air to a helmet and/or protective clothing, comprising

(a) a baseplate;

(b) an elongated core body;

(c) means securing said core body to said baseplate;

(d) means defining in said core body a longitudinally throughgoing cavity;

(e) air driving means supported in said cavity;

(f) means defining in said cavity an air inlet and an air outlet for said air driving means;

(g) energy source means connected to said air driving means for operating the same;

(h) means securing said energy source means to said baseplate;

(i) aerating hose means coupled to said air outlet for supplying air to said helmet and/or said protective clothing;

(j) means defining two ports each having an end communicating with said air inlet;

(k) at least two separate air filters connected to the one and the other of said ports for filtering ambient air drawn through said ports by said air driving means;

(l) a mouthpiece;

(m) means defining a flow passage connecting said mouthpiece with one of said ports to provide for emergency respiration with the circumvention of said cavity; and

(n) a check valve disposed in said flow passage to permit air flow through said passage solely in the direction of said mouthpiece.

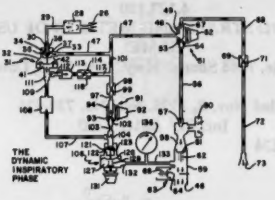
4,127,123
VENTILATOR AND METHOD

Forrest M. Bird, Palm Springs, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 593,667, Jul. 7, 1975, Pat. No. 4,044,763. This application Oct. 8, 1976, Ser. No. 730,725

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—145.8 **7 Claims**



1. In a ventilator having an inhalation phase and an exhalation phase in its operative cycle for use with a source of gas under pressure, a master sequencing cartridge having an inlet adapted to be connected to the source of gas under pressure and an outlet, a valve member movable between open and closed positions for controlling the flow of gas from the inlet to the outlet, diaphragm means for moving said valve member between open and closed positions and forming first and second chambers in the cartridge on opposite sides of the diaphragm means, a breathing circuit outlet, breathing circuit means coupling the breathing circuit outlet to the outlet of the master sequencing cartridge, a demand base line compensator having an inlet connected to the source of gas under pressure and an outlet coupled to the breathing circuit outlet, a valve member movable between open and closed positions for controlling the flow of gas from the inlet to the outlet of the compensator, diaphragm means for moving the valve member of the compensator between open and closed positions and forming first and second chambers on opposite sides of the diaphragm means, means coupling the first chamber of the compensator to the breathing circuit outlet, adjustable means for yieldably biasing said diaphragm means of the compensator towards a closed position, a single volume/rate control valve assembly having an inlet and an outlet with an orifice interconnecting the same and an ajustable needle valve disposed in the orifice, means coupling the inlet of the control valve assembly to the outlet of the master sequencing cartridge, means connecting the outlet of the control valve assembly to the first chamber on one side of the diaphragm means to bleed gas through the control valve assembly in one direction into said first chamber to move said valve member to terminate the inspiratory phase and initiate the expiratory phase and thereafter to bleed off gas from the first chamber through the control valve assembly into the breathing circuit means whereby after sufficient bleed-off of gas from the first chamber the valve member moves to the open position to terminate the expiratory phase and initiate the inspiratory phase, said volume/rate control valve assembly serving as a single adjustable control for the ventilator to control both the length of the inspiratory phase and the length of the expiratory phase.

4,127,124
URETHANE BIOIMPLANT MEMBRANE

Donald C. Clagett, Lincoln; Michael J. Svetly, Medford, and Peter H. Scott, Sudbury, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed May 12, 1977, Ser. No. 796,218

Int. Cl.[2] C08J *9/00;* A61L *15/00;* C08G *18/06, 18/08*

U.S. Cl. 128—156 **32 Claims**

1. A method of implanting an unfoamed microporous hydrophilic bioimplant membrane within the living tissue in a mammal comprising the steps of producing a substantially unfoamed microporous hydrophilic bioimplant membrane by

reacting a first component comprising isocyanate end-capped polyol chosen from the group consisting of polyetherol, polyesterol and mixtures thereof and having a reaction functionality of at least two with a second component comprising a C_2 to C_6 diol in an isocyanate monomer to diol molar ratio of 1 to 3.5 in a non-aqueous solvent reaction medium at a total solids concentration of less than 25%, volatilizing the solvent at a rate not causing the reaction product to foam whereby said unfoamed microporous hydrophilic bioimplant membrane is produced and placing the membrane so produced within the living tissue of a mammal.

4,127,125

DEVICES FOR TRANSMITTING ULTRASONIC WAVES TO TEETH

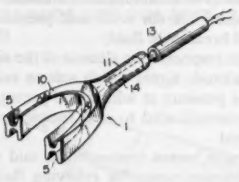
Kiyochika Takemoto, Kodaira; Yasuo Suzuki, Kurume; Yoshihito Ochiai, Fujisawa; Syozi Nakashima, Ninomiya, and Midori Hayashi, Yamakita, all of Japan, assignors to Lion Hamigaki Kabushiki Kaisha and Kaijo Denki Kabushiki Kaisha, both of, Japan

Filed Dec. 21, 1976, Ser. No. 752,894

Claims priority, application Japan, Dec. 22, 1975, 50/153085; Mar. 24, 1976, 51/35363[U]

Int. Cl.[2] A61C *19/06;* **A61M** *31/00*

U.S. Cl. 128—172.1 **15 Claims**



1. In a device for providing at the surface of at least one tooth a reinforcing layer of a decay-retarding agent, enclosure means for enclosing an ultrasonic wave transmitting medium, said enclosure means including a sheet material which defines a hollow interior space for receiving the ultrasonic wave transmitting medium, said sheet material having at least a portion which defines at the exterior of the sheet material a recess which is adapted to receive at least one tooth situated closely adjacent to said portion of the sheet material with a decay-retarding agent situated between and contacting the tooth and the sheet material, said sheet material having the property of being impermeable to the ultrasonic wave transmitting medium so that the latter cannot pass through the sheet material while said sheet material also has the property of transmitting ultrasonic waves from the medium in the interior of said enclosure means through the sheet material thereof to a tooth which is contacted by the decay-retarding agent, said enclosure means having a substantially U-shaped configuration provided by a pair of legs joined by a transverse portion of said enclosure means which is adapted to be situated at the front teeth, said enclosure means including an elongated tubular portion projecting outwardly from said transverse portion and terminating in a free end distant from said transverse portion, said tubular portion and U-shaped portion defining a common interior space for receiving the ultrasonic wave transmitting medium, and seal means situated at said free end of said tubular portion for sealing off the hollow space of said enclosure means.

4,127,126

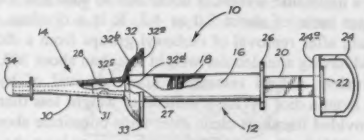
ORAL DISPENSING DEVICE

George J. Schunk, 3265 Azalea Dr. S., Salem, Oreg. 97302

Filed Nov. 11, 1976, Ser. No. 740,842

Int. Cl.[2] A61M *1/00*

U.S. Cl. 128—234 **7 Claims**



1. A syringe for the oral administration of a liquid comprising:

an elongate hollow barrel for holding a dosage of liquid, said barrel having an elongate hollow tip extending from one end thereof, said tip having an average cross-sectional area less than the cross-sectional area of said barrel;

a reciprocating plunger operatively connected to a piston slidably received within said barrel; and

a removable nozzle member including an elongate tube integrally formed at one end with a lip abutment skirt, said skirt including an orifice which communicates with the interior surface of said tube, said orifice sized to receive said tip with said tip extending therethrough and at least partially into said tube so that contact between the exterior surface of said tip and the interior surface of said tube provides frictional engagement for joining said nozzle member to said hollow barrel, said skirt being dimensioned to extend radially outwardly from the periphery of said tube and said barrel and thereby presenting an obstacle preventing lip contact with said barrel when the opposite end of said tube is orally inserted.

4,127,127

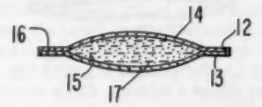
THERAPEUTIC SYSTEMS MADE FROM CERTAIN SEGMENTED COPOLYESTERS

Patrick S. L. Wong; Kelly L. Smith, both of Palo Alto, and Alan S. Michaels, Atherton, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed May 23, 1977, Ser. No. 799,854

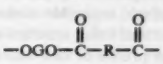
Int. Cl.[2] A61M *31/00*

U.S. Cl. 128—260 **13 Claims**

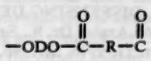


1. A therapeutic system for administering drug to a body site comprising a packet that is sized and shaped for placement at said site and is formed from:

(a) two films, at least one of which is made of a segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, the long chain ester units being of the formula:



and the short chain ester units being of the formula:



where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a molecular weight of about 400 to 4000 and a carbon-to-oxygen ratio of about 2.0 to 4.3, R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300, and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250, provided the short chain ester units constitute about 30% to about 90% by weight of the copolyester, at least about 70% of the radicals represented by D are 1,4-butylene radicals and at least about 70% of the radicals represented by R are 1,4-phenylene radicals, with the sum of the percentages of R radicals which are not 1,4-phenylene radicals and of the D radicals which are not 1,4-butylene radicals not exceeding about 30%, the two films being spaced from each other at a central portion so as to form a cavity and being sealed together at their edges to sealingly close the cavity; and

(b) drug contained within said cavity to which said one of said films is substantially permeable.

4,127,128

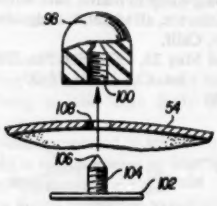
BRASSIERE HAVING SIMULATED NIPPLES AND ATTACHABLE-DETACHABLE NIPPLE SIMULATORS

Jakob E. Schmidt, 934 Monroe St., Charlestown, Ind. 47111

Division of Ser. No. 553,779, Feb. 27, 1975, Pat. No. 3,976,083. This application Jun. 4, 1976, Ser. No. 692,820

Int. Cl.[2] A41C *3/00*

U.S. Cl. 128—425 **3 Claims**



1. In a brassiere having a pair of breast receiving cups serially disposed along the length of a brassiere band, said cups comprising a layer of flexible fabric material, an improved simulated nipple attached to said layer of each cup, said simulated nipple being capable of locating at a multiplicity of positions and comprising a base corresponding approximately in size to the natural areola, a stud element having an exterior profile simulating the profile of the nipple of a human female breast and means for attaching said stud element to said breast receiving cups, said attaching means comprising a pair of separable elements adapted to be placed on opposite sides of said cups with one of said separable elements piercing said cup to join the other, said stud being attached to said other element, whereby the exterior profile of said stud element is noticeable exteriorly of said brassiere to enhance the appearance of bralessness when said brassiere is worn beneath outer garments.

4,127,129

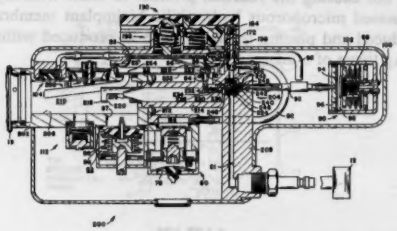
OXYGEN REGULATOR

Robert L. Cramer, Davenport, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 5, 1977, Ser. No. 812,547

Int. Cl.[2] A62B *9/02*

U.S. Cl. 128—142.2 **16 Claims**



1. An oxygen regulator for use in an aircraft comprising:

a housing having a mixing chamber therein with a first entrance port connected to a source of pressurized oxygen, a second entrance port connected to the atmosphere, and an outlet port through which breathable fluid is communicated to a breathing apparatus;

wall means responsive to an inhalation demand signal of a recipient for generating an operational input signal;

first valve means responsive to said operational input signal for allowing pressurized oxygen to flow through said first entrance port into said mixing chamber;

second valve means responsive to altitude of the aircraft for allowing air to be communicated into said mixing chamber and combined therein with said pressurized oxygen to create said breathable fluid;

sensing means responsive to altitude of the aircraft for developing an altitude signal which acts on said wall means to change the pressure at which said pressurized breathable fluid is communicated to said recipient as a function of altitude; and

first relief valve means connected to said mixing chamber and said sensing means for relieving fluid pressure from said mixing chamber when a predetermined operational fluid pressure level is created therein, said altitude signal modifying the operation of said first relief valve means to maintain said predetermined operational fluid pressure level throughout the operational altitude range of the aircraft.

4,127,130

AIR MUFFLER

Kenneth D. Naysmith, 724 Oak St., Wyandotte, Mich. 48192

Filed Jun. 2, 1977, Ser. No. 802,608

Int. Cl.[2] A62B *17/04*

U.S. Cl. 128—142.7 **18 Claims**

1. A muffler adapted to be connected to a source of air comprising a flexible tubular elongated casing having an axis, said casing having an opened end and a closed end and being divided into an outer zone and an inner zone throughout the length of said casing, said inner zone and said outer zone being located adjacent said closed end and opened end of said casing respectively, the wall of said casing surrounding said inner zone being provided with a series of ports which are spaced apart, a non-absorbent porous resilient fibrous filter media located within and throughout the inner zone of said casing, a fitting for said outer zone having one end mounted in the opened end of said casing and the opposite end extending therefrom in an axial direction away from said casing and adapted to be secured to the source of air, a bag closed at the one end and opened at the other end and made from a non-absorbent porous fibrous material, said casing extending into said bag through the opened end thereof, said bag and said

casing cooperating to form an air pocket in said bag surrounding generally the inner zone of said casing, and a clamp surrounding and engaging said bag and overlying said fitting, said clamp securing said bag to the outer zone of said casing thus

closing said air pocket, the air directed into said casing from the source being initially restricted as it passes through the non-absorbent porous filter media prior to escaping through the ports in said casing into said air pocket where the air is muffled and discharged through the porous fibrous bag.

4,127,131

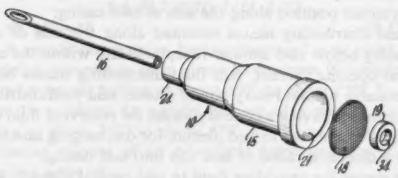
HUB ASSEMBLY FOR USE IN THE FILTRATION OF FLUIDS AND METHOD OF MAKING THE SAME

Vincent L. Vaillancourt, Livingston, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jun. 20, 1977, Ser. No. 807,854

Int. Cl.[2] A61M *5/00, 5/04;* **B01D** *35/00*

U.S. Cl. 128—221 **12 Claims**



11. In a needle assembly for intravenous insertion into a patient's vein of the type having a hollow needle connected to an open-ended hub, wherein the improvement comprises: a hub having a tapered bore extending therethrough, one end of said bore communicating with said needle, the other end being an open end in said hub; a substantially flat filter membrane in said bore having a first portion extending across said bore, and having a second portion extending from said first portion and being in substantial contact with the wall of said hub around said bore; and means within said bore for pressing said second portion into tight contact with said hub around said bore to secure said filter membrane therein.

4,127,132

DISPOSABLE DIAPER WITH UNITARY TAPE FASTENER

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 715,783, Aug. 19, 1976, Pat. No. 4,047,529. This application Apr. 28, 1977, Ser. No. 791,657

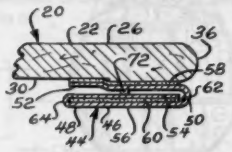
Int. Cl.[2] A44B *21/00;* **A61F** *13/16*

U.S. Cl. 128—287 **5 Claims**

1. A disposable diaper, comprising:

a pad assembly having opposed surfaces, and at least one side edge; and

a tape fastener comprising, a tape strip having opposed front and back surfaces, first and second sections and a connecting section intermediate the first and second sections, said connecting section extending between a first fold of the tape strip located adjacent an inner end of the first section and a second fold of the tape strip located adjacent an inner end of the second section, with the back surface of the second section being folded against the back surface of the connecting section about the second fold, and with the connecting and second sections being folded over the



back surface of the first section about the first fold, said first section having the front surface attached to a surface of the pad assembly adjacent said side edge, said connecting section having a release back surface, said second section having adhesive on the back surface and being releasably attached to the back surface of the connecting section, and means for releasably attaching the tape strip with the front surface of the second section adjacent the back surface of the first section.

4,127,133

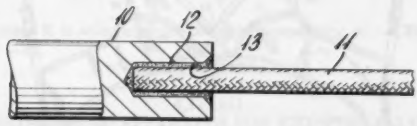
BONDED CONTROLLED RELEASE NEEDLE-SUTURE COMBINATIONS

Miguel Martinez, Baltimore, Md., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 700,374, Jun. 28, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,648

Int. Cl.[2] A61B *17/06*

U.S. Cl. 128—339 **20 Claims**



1. In an unswaged needle-suture combination comprising a needle having a sharp end and a blunt end and having an axial opening in said blunt end, and a suture, one end of which is secured in said axial opening of said needle solely by means of a bonding agent, the improvement comprising utilizing as the bonding agent a wax composition having a melting point above about 45° C. and having a bonding affinity for the needle-suture combination which provides a needle pulloff value of from about 1 to 56 ounces at room temperature.

4,127,134

GAS-ABSORBING PACER AND METHOD OF FABRICATION

Alexis E. Ushakoff, Plantation, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 11, 1977, Ser. No. 786,112

Int. Cl.[2] A61N *1/36*

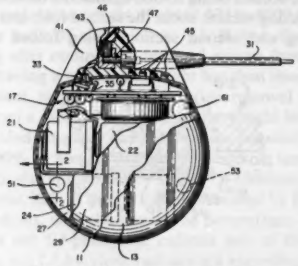
U.S. Cl. 128—419 P **7 Claims**

1. An implantable cardiac pacer comprising:

circuitry which, when energized, operates to controllably generate electrical pulses suitable for cardiac stimulation;

means for energizing said circuitry, including at least one electro-chemical cell of a type which gives off hydrogen during depletion of the cell;

a case enclosing said circuitry and said cell for protecting them from body fluids, said case being hermetically sealed and having at least one feed-through terminal for coupling pulses generated by said circuitry to a lead adapted for contacting a patient's heart;

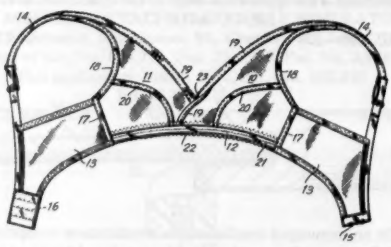


also within said case, a getter comprising a solid mass of palladium metal for absorbing hydrogen given off by the cell, said solid mass having a thin layer of palladium oxide formed on the outer surface thereof for greatly increasing the rate of absorption of hydrogen into the mass of palladium metal.

4,127,135
BRASSIERE

Erica Stern, New York, N.Y., assignor to Genesco, Inc., Nashville, Tenn.

Filed Nov. 10, 1976, Ser. No. 740,713
Int. Cl.[2] A41C *3/00*
U.S. Cl. 128—425 **3 Claims**



1. A brassiere comprising first and second breast receiving cups and a bottom edge casing, the inner lower corner of the second cup adjacent the first cup overlying the inner lower corner of the first cup adjacent the second cup without attachment between the cups, the bottom edges of the cups being secured to the bottom edge casing, a strip of material attached to an inner side edge of the first cup above the overlying inner corner of the second cup, the strip extending down over the overlying corner of the second cup without attachment to either the first or second cup and having its lower end attached to the bottom edge casing.

4,127,136
TREATMENT OF TOBACCO

Richard Comber, Southampton, England, assignor to British-American Tobacco Company Limited, London, England

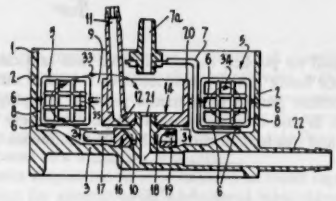
Filed Nov. 29, 1976, Ser. No. 745,693
Claims priority, application United Kingdom, Dec. 2, 1975, 49513/75; Jun. 28, 1976, 26876/76
Int. Cl.[2] A24B *3/18*
U.S. Cl. 131—140 R **8 Claims**

1. A method for the treatment of tobacco, including curing and drying thereof, comprising applying a leaf-wilt accelerating desiccating chemical agent to parts of growing mature tobacco plants, allowing the leaves to wilt and cure over a period of 2 to 50 days to effect a reduction of the water content of the leaves of at least one quarter by weight without killing the whole plant, harvesting the leaves and processing the harvested leaves for use as tobacco products.

4,127,137
WASHING APPARATUS

Reginald H. Butcher, 4 Summit Dr., Bulleen, Victoria, Australia (3105)

Filed Nov. 11, 1976, Ser. No. 740,797
Claims priority, application Australia, Dec. 11, 1975, 3916/75
Int. Cl.[2] B08B *3/02, 11/02*
U.S. Cl. 134—174 **9 Claims**



1. Washing apparatus suitable for use with a rotary power source comprising:

a cuplike casing having a central axis;

an annular receptacle for receiving and retaining articles to be washed, said receptacle comprising a plurality of circumferentially positioned cages, said receptacle being removably received within said cuplike casing at a predetermined position along the axis of said casing;

a fluid distributing means mounted along the axis of said casing below said annular receptacle and within the central opening thereof, said fluid distributing means being rotatable by said rotary power source, said fluid distributing means having a central plenum for receiving fluid and a port connected to said plenum for discharging said fluid in a direction radial of said axis into said casing;

inlet means for providing fluid to said central plenum; and

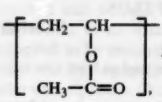
overflow means operatively associated with said casing for controlling the fluid level therein in accordance with the axial position of said annular receptacle and for discharging fluid therefrom.

4,127,138
FUEL OIL BLENDING TO IMPROVE POUR REDUCTION

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,298
Int. Cl.[2] F17D *1/16, 1/17*
U.S. Cl. 137—13 **11 Claims**

1. A fuel oil composition having improved pour point characteristics comprising a major amount of a high pour point, low sulfur, waxy residual fuel, a minor amount of a low wax, low pour residual fuel and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:



and

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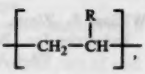
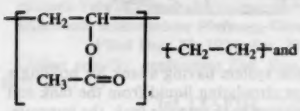
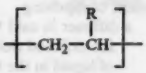


wherein R is selected from the group consisting of —Cl and —CH_2Cl.

9. In the transportation of crude oils, the improvement which comprises introducing into a pipeline the a crude oil composition comprising a major amount of a high pour point, low sulfur, waxy residual fuel, a minor amount of a low wax, low pour residual fuel and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:





wherein R is selected from the group consisting of —Cl and —CH_2Cl.

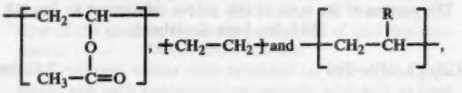
4,127,139

LOW POUR GAS OILS

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

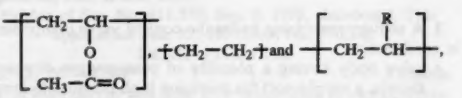
Filed Nov. 23, 1977, Ser. No. 854,303
Int. Cl.² F17D *1/16, 1/17*
U.S. Cl. 137—13 **10 Claims**

1. A gas oil composition having improved pour point characteristics comprising from about 55 to about 90 weight percent of a gas oil boiling at about 650° to about 750° F., from about 10 to about 45 weight percent of a middle distillate boiling at about 350° to about 650° F. and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:



wherein R is selected from the group consisting of —CH_2Cl and —Cl.

8. In the transportation of a gas oil composition, the improvement which comprises introducing into a pipeline a gas oil composition comprising from about 55 to about 90 weight percent of a gas oil boiling at about 650° to about 740° F., from about 10 to about 45 weight percent of a middle distillate boiling at about 350° to about 650° F. and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:



wherein R is selected from the group consisting of —CH_2Cl and —Cl.

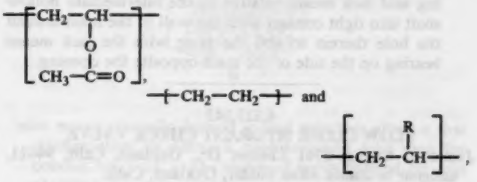
4,127,140

CRUDE OIL COMPOSITIONS HAVING LOW POUR POINTS

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

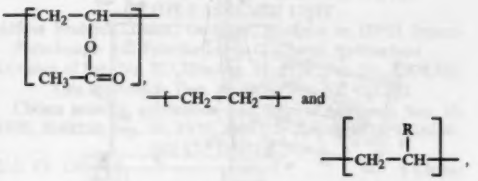
Filed Nov. 23, 1977, Ser. No. 854,304
Int. Cl.² F17D *1/16, 1/17*
U.S. Cl. 137—13 **10 Claims**

1. A crude oil composition having improved pour point characteristics comprising a waxy crude oil and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:



wherein R is selected from the group consisting of —CH_2Cl and —Cl.

8. In the transportation of crude oils, the improvement which comprises introducing into a pipeline the a crude oil composition comprising a waxy crude oil and an effective pour depressant amount of an oil-soluble terpolymer comprising recurring units of:



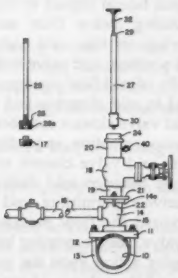
wherein R is selected from the group consisting of —CH_2Cl and —Cl.

4,127,141

METHOD AND APPARATUS FOR STOPPING FLUID ESCAPE FROM PIPE MAINS

Alfred D. Ledonne, Allison Park, and George A. Scheuering, Pittsburgh, both of Pa., assignors to Coupling Systems, Inc., Pittsburgh, Pa.

Filed May 31, 1977, Ser. No. 801,650
Int. Cl.² F16L *55/12;* F16K *43/00*
U.S. Cl. 137—15 **12 Claims**



12. A method of sealing the opening in the sidewall of a fluid carrying main comprising the steps of:

(a) inserting one end of a stopper rod having an expandable resilient member, said expandable resilient member having one end abutting one end of the stopper rod, an intermediate hollow shaft threaded in the stopper rod and extending through and abutting the other end of the resilient member to expand it, and a threaded jack means extending through and threadingly engaging the intermediate hollow shaft, said jack means bearing on the side of the main opposite the opening,

(b) expanding the resilient member to a diameter greater than the opening by rotating the intermediate hollow shaft relative to the stopper rod, and

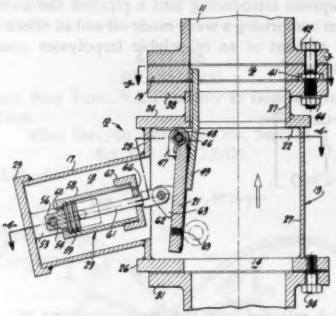
(c) raising the expanded resilient member radially by rotating said jack means relative to the intermediate hollow shaft into tight contact with the wall of the main around the hole therein to seal the same with the jack means bearing on the side of the main opposite the opening.

4,127,142

SLOW CLOSE HYDRANT CHECK VALVE

James A. Snider, 5761 Chelton Dr., Oakland, Calif. 94611, assignor to James Allen Snider, Oakland, Calif.

Filed May 11, 1977, Ser. No. 795,926
Int. Cl.² E03B 9/04; F16K 17/36, 37/00
U.S. Cl. 137—68 R **4 Claims**



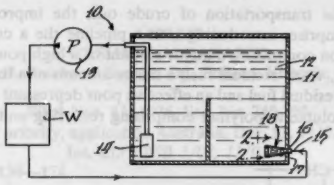
1. A hammerless, automatic shut-off valve for cooperating with a wet barrel hydrant mounted downstream of the hydrant riser comprising, a shut-off valve body adapted to be mounted between the hydrant and the hydrant riser and having a flow passageway therethrough, a valve seat in the valve body about the flow passageway, a valve closure member pivotably mounted in the valve body laterally of the flow passageway and pivotable from an out-of-the-way position from the flow passageway to a closed position engaging said valve seat to close said flow passageway, holding means engaging said valve closure member for maintaining it in the out-of-the-way position, said holding means being mounted upon break-away structure active upon lateral impact to the hydrant serving to disengage said holding means from said closure member, spring means serving to bias said valve closure member towards the closed position, said valve body including a chamber disposed laterally of said flow passageway, dash-pot assembly means disposed in said chamber and acting between said valve body and said valve closure member serving to permit a controlled valve closure action upon disengagement of said holding means with said valve closure member, and connection means arranged between said dash-pot means and said valve body operatively permitting said dash-pot means to move as a unit toward the flow passageway in response to movement of the valve closure member into the flow stream to commence a damping action upon the valve closure member for gradual closing of the valve, said spring means serving to pivot said closure member into said flow passageway for impingement with the fluid stream moving therethrough.

4,127,143

TANK DIFFUSER

William L. Zinga, Arlington Heights, Ill., assignor to Zinga Industries Inc., Bellwood, Ill.

Filed Apr. 18, 1977, Ser. No. 788,311
Int. Cl.² B05D 17/00
U.S. Cl. 137—592 **13 Claims**



1. In a liquid circulation system having a tank for holding a body of liquid, means for circulating liquid from the tank and through a return flow passage back into the tank, the improvement comprising

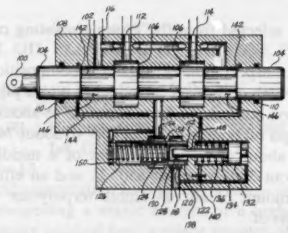
a diffuser in said tank connected to said return flow passage for diffused delivery of the returning liquid into the body of liquid in the tank, said diffuser being defined by a frustoconical wall having a connecting means at its narrow outer end adapted to have fluid flow communication with the return flow passage for delivering the returning liquid into the frustoconical interior space defined by said wall, said wall being provided with at least one slot elongated in a direction parallel to the axis of the wall and extending a major portion of the length of said wall, the slot widening toward the wide end of the wall to have its widest portion disposed adjacent said wide end of the wall, said interior space of the wall being free of obstructions to permit the returning liquid to flow through said space into the body of liquid in the tank with the cross-sectional area of the returning liquid stream gradually increasing within said space to effectively minimize turbulent aeration of the liquid.

4,127,144

SELF-DEPRESSURIZING METERING VALVE

Bernus G. Turner, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 565,901, Apr. 7, 1975, Pat. No. 4,003,400. This application Aug. 23, 1976, Ser. No. 716,855
The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.
Int. Cl.² F16K 11/00
U.S. Cl. 137—596 **7 Claims**



1. A self-depressurizing hydraulic control valve comprising in combination:

a valve body having a plurality of passageways disposed therein, a supply port for receiving high pressure hydraulic fluid and a cylinder port for delivering a metered flow of said fluid;

a metering valve disposed within a main valve cavity within

said valve body for controlling the flow of hydraulic fluid through at least one of said passageways;

a metering land located on said metering valve and having a metering edge;

hydraulically operated means responsive to the rate of said flow for isolating the metering edge from said high pressure fluid when the flow rate is reduced to a preselected value; and,

means for arming said means for depressurizing including an arming land located on said metering valve.

4,127,145

MOVABLE PIPELINE ELEMENT

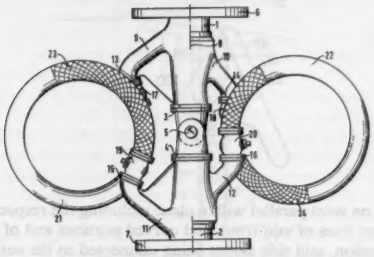
Udo Erlenmayer, Eutingen; Reinhard Gropp, Arnbach, and Hans Zenn, Pforzheim, all of Germany, assignors to Metallschlauch-Fabrik Pforzheim (vorm. Hch. Witzenmann) Gesellschaft mit beschrankter Haftung, Germany

Filed Dec. 20, 1976, Ser. No. 752,546

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1975, 2557713

Int. Cl.[2] F16L *27/02*

U.S. Cl. 137—599 **80 Claims**



1. A movable pipeline construction comprising:

a first pipe means for conveying a pressure medium therethrough;

a second pipe means for conveying a pressure medium therethrough;

pivotable joint means for sealingly connecting adjacent ends of said pipe means to each other;

at least two port means each provided on said first pipe means for directing at least a portion of a flow of a medium from said first pipe means;

at least two flexible pipeline means each connected respectively to said at least two port means for receiving the flow of the medium from said port means of said first pipe means;

at least two port means each provided on said second pipe means and each connected respectively with said at least two flexible pipeline means for diverting the flow from said pipeline means into said second pipe means,

wherein said at least two flexible pipeline means extend respectively from said at least two port means on said first pipe means to said at least two port means on said second pipe means through an arcuate path of a predetermined arc length of substantially 360°.

4,127,146

HIGH ENERGY LOSS DEVICE

Richard E. Self, Los Alamitos, Calif., assignor to Control Components, Inc., Irvine, Calif.

Division of Ser. No. 611,739, Sep. 9, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,548

Int. Cl.[2] F16K *47/08*

U.S. Cl. 137—625.3 **3 Claims**

1. A high energy loss fluid flow controlling device comprising:

a plurality of members joined together into a rigid structure to define a series of high energy loss paths for fluid flow, said plurality of members including series of disks having abutting surfaces and forming high energy loss paths therebetween for fluid flow therealong wherein one of the disks of said series of disks has a series of labyrinth paths formed therein to subject the fluid to a plurality of turns within the plane of said disk between the inlet and the outlet of the disk;

inlet means centrally formed in said members along a first configuration to define a predetermined inlet area for conducting fluid to the series of paths formed by said plurality of members; and

outlet means formed along a scalloped surface substantially concentric with said inlet means and extending the entire height of said rigid structure to provide a series of openings for exhausting fluid from the high energy loss path of said rigid structure.

4,127,147

PROCESS FOR MANUFACTURING A WOVEN SLIDE-FASTENER UNIT

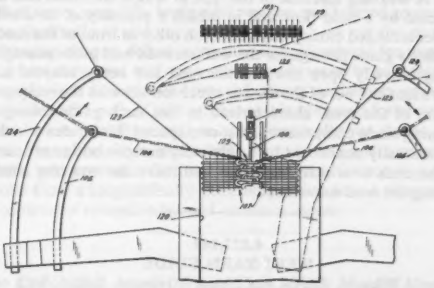
Alfons Frohlich, Essen, Germany, assignor to OPTI Patent-Forschungs- und Fabrikations-AG, Glarus, Switzerland

Division of Ser. No. 722,339, Sep. 10, 1976, Pat. No. 4,078,585. This application Dec. 30, 1976, Ser. No. 755,592

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1975, 2540238; Sep. 10, 1975, 2540272; Jun. 1, 1976, 2624450

Int. Cl.[2] D03D *47/06*

U.S. Cl. 139—11 **6 Claims**



4. A loom for producing a slide-fastener stringer having a pair of interconnected stringer halves each with a respective support tape and a coupling element having a multiplicity of coupling heads along an edge of the tape, said loom comprising:

(a) means for advancing a warp consisting of a pair of groups of warp threads;

(b) a forming mandrel disposed between said groups of warp threads;

(c) means for raising and lowering said mandrel;

(d) harness means for shedding each of said groups of warp threads on opposite sides of said mandrel to form a pair of warp sheds at the same level;

(e) a pair of weft needles swingable into said sheds from opposite sides of the warp for inserting into said sheds

respective strands of synthetic-resin monofilament adapted to form said coupling elements and looping said strands around said mandrel while withdrawing said strands at the sides of the warp from which they were inserted after crossing them over, thereby laying each strand as a double weft in each of said sheds;

(f) means for beating up the weft so that each coupling head is formed as a loop around said mandrel and has a pair of shanks inlaid in the respective tapes as a double weft, said mandrel being raised and lowered in the cadence of movement of said needles into and out of said sheds; and

(g) a vertical displaceable mandrel holder and magnet means for releasably retaining said mandrel holder in upper and lower positions.

4,127,148

WEAVING MACHINE OF THE TYPE IN WHICH WEFT INSERTION IS EFFECTED BY A FLUID FLOW

Adrianus J. F. Larmit, Moergestel, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

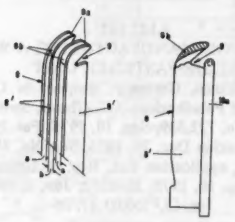
Continuation-in-part of Ser. No. 794,709, May 9, 1977, abandoned, and Ser. No. 644,148, Dec. 24, 1975, abandoned.

This application Feb. 22, 1978, Ser. No. 879,876

Claims priority, application Netherlands, Mar. 20, 1975, 7503375

Int. Cl.[2] D03D *47/28*

U.S. Cl. 139—435 **2 Claims**



1. A weaving machine of the type in which weft insertion is effected by a fluid flow and in which a plurality of notched blades arranged closely adjacent each other in front of the reed confine a guide passage for the weft threads, said guide passage being laterally open towards the reed and being adapted to move into and out of the shed in synchronism with the reciprocation of the reed, characterized in that each guide passage forming blade comprises at least two spaced thin blades which are mutually connected by a relatively narrow bridge at least at the ends at which they enter and leave the weaving shed during the reed movement.

4,127,149

WEFT YARN GUIDE

Takeshi Kikuchi, Chofu, and Shinji Mizunaga, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jul. 8, 1977, Ser. No. 814,091

Claims priority, application Japan, Jul. 14, 1976, 51/92881[U]

Int. Cl.[2] D03D *47/31*

U.S. Cl. 139—435 **4 Claims**

1. A weft yarn guide for an air jet shuttless weaving loom, comprising

a trunk portion and

a curved portion branched off from said trunk portion and then curved toward said trunk portion, said trunk and curved portions forming therebetween

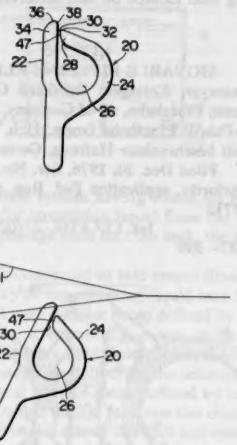
a guiding aperture through which a weft yarn is passed during insertion, said curved portion having

an end portion confronting said trunk portion so that said trunk portion and said end portion defines therebetween

a gap which provides communication between said aperture and the outside thereof and through which the weft yarn is passed from said aperture to the outside prior to beat-up, said trunk portion having

an extension extending outer from the vicinity of a portion of said trunk portion which confronts said end portion of said curved portion, said extension

having a rounded apex, a portion connected to said rounded apex and tapering to said rounded apex, and arcuate side slopes, said side slopes defining the surfaces of said extension on sides parallel with a plane including the respective center lines of said trunk and curved portions and of said extension, said side slopes being connected to the surface of said tapering portion and to each other and to an inner surface of said extension on a side thereof confronting said end portion, said side slopes being inclined inwards to said inner surface of said extension, said extension being rounded at a junction of said side slopes and at a junction of said surface of said tapering portion and said side slopes.



4,127,150

RAPIER DRIVING DEVICE ON RAPIER LOOMS

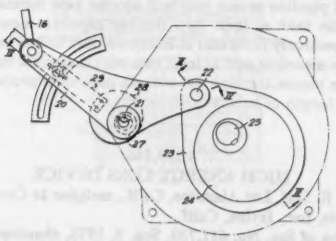
Patrick A. Steverlynck, Vichte, Belgium, assignor to Weefautomaten Picanol N.V., Ieper, Belgium

Filed Sep. 24, 1976, Ser. No. 726,227

Claims priority, application Netherlands, Oct. 6, 1975, 7511709

Int. Cl.[2] D03D *47/00*

U.S. Cl. 139—449 **5 Claims**



1. A driving device for rapiers of rapier looms carrying a gripper, wherein the rapier is driven by a motor of the loom and which is provided with an adjustable reduction mechanism for a multiplier driving device comprising a series of links joined at pivot means wherein means are provided for adjustment of the distance between two of said pivot means; said

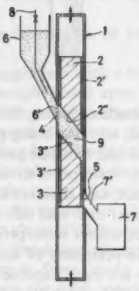
means for adjusting said distance comprising an eccentric bushing supporting one of said pivot means, said adjusting means having a control member for adjusting said eccentric whereby the same may be continuously adjusted between two limit values.

4,127,151

APPARATUS FOR TRANSFER OF POWDER INTO HIGH-PRESSURE VESSEL AND METHOD FOR TRANSFER

Shigeru Ueda; Shinichi Yokoyama; Yoshinori Nakata; Yoshihisa Hasegawa; Ryoichi Yoshida; Yousuke Maekawa; Yuji Yoshida, and Kazuo Makino, all of Sapporo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 12, 1976, Ser. No. 741,301
Claims priority, application Japan, Nov. 26, 1975, 50-142061
Int. Cl.[2] G01F *11/18*
U.S. Cl. 141—5 **2 Claims**



1. An apparatus for transferring a powder into a high-pressure vessel, which comprises the combination of

(a) a vertical pressure-proof cylinder defining

(1) a powder inlet opening having an upper and a lower edge in an upper portion of the cylinder and

(2) a powder outlet opening having an upper and a lower edge in a lower portion of the cylinder,

(b) an upper piston pressure-tightly disposed inside the cylinder in the upper portion thereof, the upper piston having an inclined lower surface extending from an upper to a lower edge thereof,

(1) the upper piston being arranged for reciprocation between an ascended state wherein the upper edge of the inclined lower surface of the upper piston is positioned at or above the upper edge of the inlet opening and a descended state wherein the lower edge of the inclined lower surface of the upper piston is positioned at or below the upper edge of the outlet opening while the upper piston closes the inlet opening, and

(c) a lower piston pressure-tightly disposed inside the cylinder in the lower portion thereof, the lower piston having an inclined upper surface parallel to the inclined lower surface of the upper piston and extending from an upper to a lower edge,

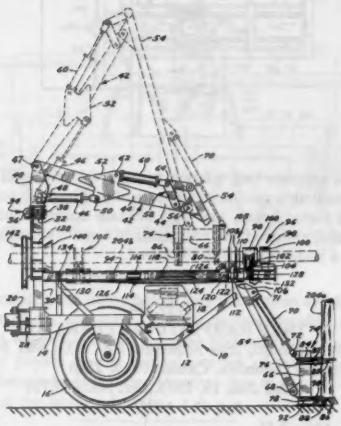
(1) the lower piston being arranged for reciprocation between a descended state wherein the lower edge of the inclined upper surface of the lower piston is positioned at or below the lower edge of the outlet opening and an ascended state wherein the upper edge of the upper surface of the lower piston is positioned at or below the lower edge of the inlet opening while the lower piston closes the outlet opening.

4,127,152

MOBILE TREE PROCESSOR

Robert W. Larson, Port Arthur, Canada, and John P. Lundberg, Washburn, Wis., assignors to FMC of Canada, Ltd., Scarboro, Canada

Continuation of Ser. No. 727,431, May 8, 1968, abandoned. This application Oct. 4, 1971, Ser. No. 186,439
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **8 Claims**



1. A mobile tree processor comprising a vehicle, a clamping device movable generally longitudinally of said vehicle for gripping and advancing a cut tree, an articulated boom assembly including a main boom and reach boom, said main boom being mounted at one end on said vehicle for rotation about a generally vertical axis and said reach boom having one end pivotally connected to the other end of said main boom, a grapple and shear means carried on the other end of said reach boom for gripping and cutting a standing tree, said grapple and shear means being pivotal so that a tree after it is cut can be tilted into a generally horizontal position and located generally longitudinally of said vehicle for delivering the cut tree to said clamping device, delimbing means on said vehicle for removing branches from said cut tree as it is advanced by said clamping device, a vertically disposed shear mechanism on said vehicle in the path of said cut tree as it is advanced for severing successive bolts from said cut tree, and collector means oriented transverseiy on said vehicle for receiving said successive bolts, said processor further including means for rotating said bolts from a longitudinally directed position into a transverse position for reception by said collector means.

4,127,153

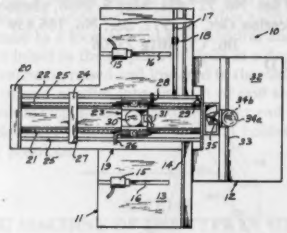
DOVETAIL MACHINE AND SLIDING DOVETAIL CONSTRUCTION

Albert Cipollone, 173 A Pleasant St., Melrose, Mass. 02176

Filed Jul. 27, 1972, Ser. No. 275,817
The portion of the term of this patent subsequent to Jun. 28, 1993, has been disclaimed.
Int. Cl.[2] B27C *9/04*
U.S. Cl. 144—3 R **1 Claim**

1. A female dovetail cutting machine, comprising a bed with means for holding a panel to be cut and a cutter head carriage movable on a pair of oppositely threaded rods driven in unison by a motorized gear box, a female dovetail cutter head carried by said carriage and adapted for cutting a female dovetail in the panel, said carriage being engageable with said rods for movement in either opposite direction therealong by manually operated split nut levers, a pair of rails disposed on said bed parallel to said rods, carriage stop means slidably supported on said pair of rails, said stop means including a cam engageable

by one of said split nut levers so as to limit the travel of said carriage in at least one direction, said female dovetail cutting machine being in combination with a male dovetail cutting machine disposed adjacent a side edge of said bed, and comprising a separate bed, a fence against which a panel to be cut may be movably guided and a vertically adjustable pair of male dovetail cutter heads, said pair of male dovetail cutter heads being axially aligned and adjustable in respect to each other for cutting a male dovetail in the panel.

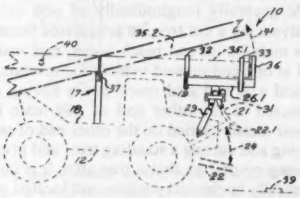


4,127,154

TREE HARVESTING APPARATUS

Lionel W. Kabotoff, Iron Mountain Rd., P.O. Box 1661, Merritt, British Columbia, Canada (VoK 2Bo)

Filed Jun. 14, 1976, Ser. No. 695,725
Int. Cl.[2] A01G *23/08*
U.S. Cl. 144—3 D **23 Claims**



1. A tree harvesting apparatus for use with a vehicle having a driver's cab, the apparatus having a tree holding and cutting means and a tree storing means, the tree holding and cutting means being characterized by:

(a) a main post mounted for swinging relative to the vehicle about a generally vertical cutting position in which the post has upper and lower ends,

(b) upper and lower grapples adjacent the upper and lower ends of the post, the grapples being adapted to open and close so as to enclose a tree therein,

(c) a hinge mounting for attachment to the vehicle for cooperating with the post to mount the post for forward and backward tilting movement relative to the vehicle when viewed laterally between an essentially vertical cutting position and an inclined unloading position,

(d) a sideways tilting means cooperating with the post to tilt the post sideways to permit general alignment of the post with a tree,

(e) slide means cooperating with the hinge mounting to permit lateral sliding of the post relative to the vehicle for lateral positioning of the grapples,

(f) tree cutting means mounted adjacent the lower end of the post and disposed below the lower grapple when the post is vertical,

and the tree storing means includes:

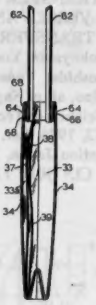
(g) a bunk mounted on the vehicle and positioned adjacent an end of the vehicle remote from the holding and cutting means when in the cutting position so that when the post is swung relative to the vehicle to the unloading position the bunk cooperates with the upper and lower grapples to accept the log therefrom so that a major portion of the log extends away from the cab so as to restrict minimally visibility.

4,127,155

WATERPROOF BAG WITH WATERPROOF DIVIDER

Dennis H. Hydorn, 96 Walker Ave., Toronto, Ontario, Canada

Filed Nov. 15, 1976, Ser. No. 741,852
Int. Cl.[2] A45C *3/04*
U.S. Cl. 150—1.7 **3 Claims**



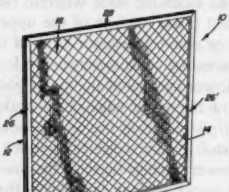
1. A carrying bag made of strong flexible material and having an open upper end, said bag being provided with a handle at said open upper end and two side panels separated from one another by two flexible waterproof dividers secured in said bag at the periphery thereof, said dividers each having a free edge terminating at said upper end, said side panels being laminated on their inner surfaces with a waterproof material, said dividers being sealed at the periphery of said bag to provide three compartments which are each capable of holding water, said dividers being releasably sealed to one another at their free edges by a closure device to provide a central compartment between said dividers, said closure device being of the type which seals off the central compartment in a manner so as to be watertight and airtight.

4,127,156

BURGLAR-PROOF SCREENING

James R. Brandt, 1050 N. Loudon Twp. Rd. 47, Fostoria, Ohio 44830

Filed Jan. 3, 1978, Ser. No. 866,751
Int. Cl.[2] E06B *3/80*
U.S. Cl. 160—179 **5 Claims**



1. In combination with a closure provided with a cutout, a screen removably mounted on the closure and disposed within the cutout, the screen comprising, in combination:

(a) a planar framework provided with an opening;

(b) a mesh arranged in the plane of the framework covering the opening provided in the framework:

(c) holding means provided on the framework for attaching the mesh to the framework;
(d) a grille arranged covering the opening provided in the framework, the grille being disposed substantially parallel to and coextensive with, but spaced from the mesh; and
(e) connector means provided on the framework for attaching the grille to the framework, the framework including a rail having a pair of substantially parallel faces, and the connector means including, in combination:
(1) the rail being provided with a recess in one of the faces thereof, the recess being arranged for receiving a peripheral portion of the grille; and
(2) a cover removably attached to the rail in clamping relation with the one of the faces of the rail and disposed entirely in a plane substantially parallel to the plane of the framework for retaining the peripheral portion of the grille within the recess.

4,127,157

ALUMINUM PHOSPHATE BINDER COMPOSITION CURED WITH AMMONIA AND AMINES

John J. Gardikes, and Richard H. Toeniskoetter, both of Worthington, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 7, 1977, Ser. No. 775,013
Int. Cl.² B22C *1/10, 1/18*
U.S. Cl. 164—12 **34 Claims**

1. A process for the fabrication of foundry shapes which comprises:
(a) mixing foundry aggregate with a bonding amount of up to about 10% by weight based upon the weight of aggregate of a composition which comprises in admixture;
(i) boronated hydrogen aluminum phosphate containing a mole ratio of phosphorus to aluminum of about 2:1 to about 5:1 and from about 3 to about 40 mole percent of boron based on the moles of aluminum, and
(ii) water; wherein the amount of aluminum phosphate is from about 50 to about 95% by weight based upon the total weight of aluminum phosphate and water, the amount of water is from about 5 to about 50% by weight based upon the total weight of aluminum phosphate and water, and the quantity and particle size of said aggregate are such to provide sufficient porosity in the foundry shape to permit escape of volatiles from the shape during casting;
(b) introducing the foundry mix obtained from step (a) into a pattern;
(c) flowing a curing gas selected from the group consisting of ammonia and amine gases through said foundry mix for a time at least sufficient for the mix to become self-supporting; and
(d) thereafter removing the shaped foundry mix of step (c) from the pattern.

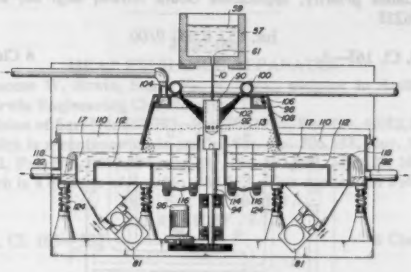
4,127,158

PROCESS FOR PREPARING HOLLOW METALLIC BODIES

Kenji Matsuno, Kudamatsu, Japan, assignor to Toyo Kohan Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 440,199, Feb. 6, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 645,931
Claims priority, application Japan, Oct. 15, 1973, 48-114689; France, Jan. 28, 1974, 7402714; United Kingdom, Jan. 31, 1974, 4614/74; Fed. Rep. of Germany; Jan. 7, 1974, 2400566
Int. Cl.² B01J *2/06*
U.S. Cl. 164—81 **18 Claims**

1. A process for forming hollow metallic bodies comprising:
(a) forming a columnar stream of molten metal, the temperature of which is in the range of 50° C to 500° C above the melting point of the metal;
(b) directing said stream into a liquid, wherein the temperature at which liquid vaporizes is lower than the temperature of the molten metal;
(c) forming flat molten metal droplets by impinging said molten columnar stream against a rotating rotor means which is disposed at a depth of less than 150 mm from the surface of said liquid such that the columnar stream is spread and flattened to form a flat stream and dispersing the flat stream in the form of flat droplets as the result of the centrifugal force caused by the rotation of said rotor means wherein the flat droplets have sufficient thermal energy to convert the flat droplets into said hollow metallic bodies; and



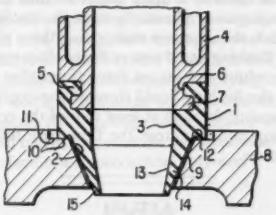
(d) vaporizing the liquid below said flat molten droplets as a result of the contact of the flat molten droplets and the liquid whereby hollow metallic bodies are formed as the vapor pushes up the central portion of said flat molten droplets and edges come together due to the surface tension of the molten droplet.

4,127,159

TIP FOR FOUNDRY CORE BLAST PIPE

Jacques Chamdru, Le Mesnil Saint Denis, and Marcel Guilloton, Aulnay sous Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 12, 1976, Ser. No. 675,792
Claims priority, application France, Apr. 10, 1975, 75 11176; Jul. 28, 1975, 75 23421
Int. Cl.² B22C *15/24*
U.S. Cl. 164—200 **4 Claims**



1. A one-piece tip for a foundry core blast pipe made of plastic material, having a large central bore intended for filling, which comprises:
an essentially cylindrical portion with one end thereof to be connected to said blast pipe, and a second end thereof to contact a core mold;
a coupling cone extending from said second end of said essentially cylindrical portion and ending at its lower extremity in a circular rim, for disposition in a filling hole of the core mold; said second end surface of said essentially cylindrical portion including an essentially circular shoulder outside said coupling cone which provides elastic support on the upper wall of said core mold, thus producing a tight seal by exerting horizontal thrust on said core mold; and means forming a narrow groove in said second end surface of said essentially cylindrical portion, at the junction between said essentially circular shoulder and said coupling core, so as to improve, by elastic deformation of said shoulder, the tightness of said seal that is

obtained by its support on said upper wall of said core mold.

4,127,160

FLUSHING OF LIQUID CIRCULATION SYSTEMS

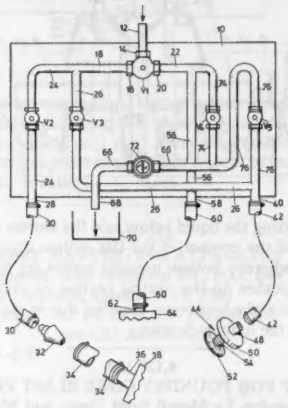
Kenneth L. Joffe, Warner Beach, South Africa, assignor to Wynn Oil Company, Fullerton, Calif.

Filed Sep. 27, 1976, Ser. No. 727,143

Claims priority, application South Africa, Sep. 30, 1975, 75/6215

Int. Cl.² F28G *9/00*

U.S. Cl. 165—1 **6 Claims**



1. A method of flushing debris from a motor vehicle cooling system composed of three units in the form of a watercooled engine, a radiator, and a heater, the method including the steps of connecting each of the cooling system units by means of a conduit to a source of flushing liquid under pressure, and selectively opening and closing the three conduits and connecting one of them to a drain outlet so that flushing liquid passes in a sequence of phases through the cooling system to the drain outlet, the sequence comprising three phases in each of which the flushing liquid enters the cooling system through one of the conduits and leaves through another conduit, the flow path of the flushing liquid through the cooling system in each phase passing through at least two of the cooling system units and being different from the flow path followed in the other two phases.

4,127,161

ENERGY STORAGE UNIT AND SYSTEM

Arthur J. Clyne, Alma; John E. Knarr, Lansing, and Stanley Miller, Alma, all of Mich., assignors to Energy Recycling Company, Lansing, Mich.

Filed Mar. 2, 1977, Ser. No. 773,714

Int. Cl.² F28D *21/00*

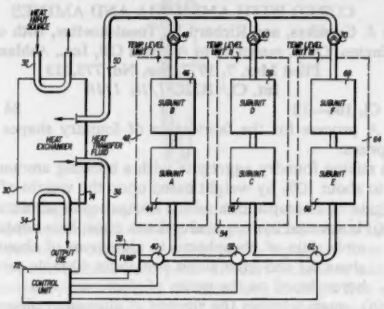
U.S. Cl. 165—34 **19 Claims**

1. A heat storage system of the type in which heat from a heat transfer fluid is transferred to a heat storage substance when the transfer fluid temperature is greater than the melting temperature of the storage substance such that heat is stored in the substance as heat of fusion, and wherein heat is transferred from said substance to the transfer fluid when the transfer fluid temperature is less than the melting temperature of the substance, said heat storage system comprising:

at least two heat storage container means positioned in heat transfer relationship with a heat transfer fluid flow passage, each heat storage container means having a heat storage substance therein, the heat storage substance in each container means being selected such that the melting temperature of the heat storage substance in each container means will be less than the expected high temperature of the heat transfer fluid in the system and greater than the expected low temperature of the heat transfer fluid, a first of said container means having therein a heat storage substance of a first melting temperature and a second of said container means having therein a heat storage substance of a second melting temperature other than said first melting temperature, and

a source of said heat transfer fluid and means for causing the heat transfer fluid to flow from said source through the heat storage fluid flow passage such that heat of a first temperature will be stored as heat of fusion in said first container means and heat of a second temperature will be stored as heat of fusion in said second container means

said first container means being supported in a first heat storage unit of a first temperature level forming a portion of said fluid passage, and said second container means



being supported in a second heat storage unit of a second temperature level higher than the first level forming a second portion of the heat transfer fluid passage, said first and second portions of the fluid flow passage having a parallel fluid flow relationship,

said source of heat transfer fluid being a heat exchanger, and said heat storage system further comprising a first valve between the heat exchanger and said first and second portions of the heat transfer fluid flow passage and a second valve between said first and second portions of said heat transfer fluid flow passage, such that when said first valve is closed, fluid will not flow through either of said portions of the fluid flow passage, and when said first valve is opened and said second valve is closed, fluid will flow through said first portion but not said second portion, and when both of the valves are open, fluid will flow through both portions of the fluid flow passage.

4,127,162

MODULAR AIR CONDITIONING APPARATUS

Alvin S. Braver, Oklahoma City, Okla., assignor to International Environmental Mfg Corp., Oklahoma City, Okla.

Continuation of Ser. No. 482,133, Jun. 24, 1974. This application May 7, 1976, Ser. No. 684,454

Int. Cl.² F24F *3/08*

U.S. Cl. 165—50 **2 Claims**

1. An improved air conditioning apparatus of the type requiring connection to a source of fluid heat transfer medium for air conditioning an area and disposable behind wall partitions or the like, comprising:

an box frame having three open access sides;

a mid-panel having an opening therethrough and supported by the frame and separating the frame into an upper plenum section and a lower operating section;

a blower supported by the mid-panel in the operating section and disposed to blow air from the operating section

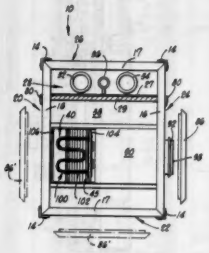
through the opening in the mid-panel into the plenum section;

a heat exchanger supported on the frame in the operating section and positioned along a selected one of the access sides;

control means for sensing the temperature of the air in the area and for controlling the operation of the blower in response thereto;

an outlet grille supported by the frame along one of the access sides and disposed to direct air from the plenum section;

an intake grille removably supported by the frame and positionable at the selected access side in intake air relationship to the heat exchanger, the intake grille assembly defining an access port through which the blower, the



heat exchanger and the control means are selectively removable from the operating section;

a vertical supply riser pipe supported by the frame and having fluid communication with the heat exchanger;

a vertical return riser pipe supported by the frame and having fluid communication with the heat exchanger;

a vertical condensate drain riser pipe supported by the frame;

a drain pan supported by the frame below the heat exchanger;

a drain tube connecting the drain pan and the condensate drain riser pipe; and

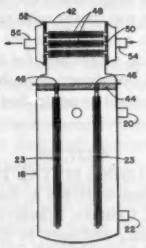
an electrical heater supported by the mid-panel in the plenum section and disposed in air heating relationship to the air blown by the blower through the opening in the mid-panel.

4,127,163

FREEZER-SUBLIMER FOR GASEOUS DIFFUSION PLANT

George R. Reti, San Rafael, Calif., assignor to Bechtel International Corp., San Francisco, Calif.

Filed Aug. 18, 1976, Ser. No. 715,468
Int. Cl.[2] F25J *3/08*
U.S. Cl. 165—61 **26 Claims**



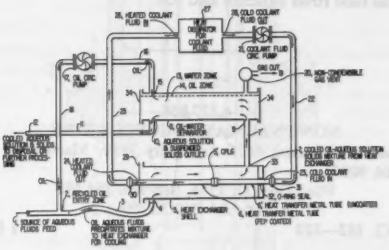
1. A method of operating a freezer-sublimer of a gaseous diffusion plant in conjunction with a cascade diffusion separation of UF_6 gas comprising the steps of: forming a plurality of upwardly extending heat pipes and placing a quantity of coolant in the pipes; cooling the coolant adjacent an upper end of the pipes sufficiently to transform evaporated coolant into liquid coolant; gravitationally flowing the liquid coolant from adjacent the upper end towards a lower end of the pipes; flowing UF_6 gas over an exterior of a portion of the pipes disposed below their upper ends to thereby cool the gas and solidify it on such pipe portions; and intermittently subliming the solidified gas by heating it.

4,127,164

HEAT EXCHANGE APPARATUS

Ransome W. Erwin, Santa Fe, N. Mex., assignor to Austral-Erwin Engineering Co., Houston, Tex.

Division of Ser. No. 588,797, Jun. 20, 1975, Pat. No. 4,082,140, which is a continuation-in-part of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496, and Ser. No. 581,849, May 29, 1975, which is a division of Ser. No. 306,183,. This application Feb. 3, 1976, Ser. No. 654,848
Int. Cl.[2] F28F *19/02*
U.S. Cl. 165—133 **8 Claims**



1. Heat exchange apparatus for treatment of aqueous fluids containing dissolved or dispersed precipitable solids or mineral salts, designed to prevent adherence of the precipitated solids to fluid contacted surface of said apparatus, said apparatus comprising 1) an outer tube, shell or casing, and 2) an inner heat exchange tube extending into said casing, both said casing and said inner tube having fluid contacted surfaces which are a) preferentially oil wettable, and b) substantially zero water adsorbent, 3) means for continuously supplying oil to the preferentially oil wettable contacted surfaces and means for passing said aqueous fluid through said shell in heat exchange relation to said inner tube, wherein the substantially zero water adsorbent surface is a fluorocarbon polymer.

4,127,165

ANGULAR ROD BAFFLE

William M. Small, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1976, Ser. No. 703,028
Int. Cl.[2] F28F *9/00*
U.S. Cl. 165—162 **20 Claims**

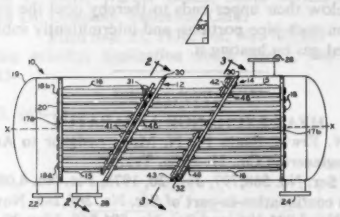
1. Supporting apparatus for a plurality of tubes in the form of a tube bundle suitable for use in a shell and tube heat exchanger, said tubes positioned to form at least a first plurality of parallel tube rows and a second plurality of parallel tube rows and spaces between at least a portion of the adjacent tube rows comprising:

at least one baffle set providing radial support for each tube and comprising two baffles, wherein each baffle is positioned along the length of the tube bundle a distance relative to the other baffle of the baffle set and wherein each baffle comprises

an outer ring surrounding said tube bundle positioned in a plane which is not perpendicular to the longitudinal axis of said tube bundle, said plane forming a baffle angle with

a plane which is perpendicular to the longitudinal axis of the tube bundle; and

a plurality of rods positioned in all of the spaces between adjacent tube rows in one plurality of parallel tube rows so



that one rod is positioned in each space, said plurality of rods cooperating with said outer ring to form a plurality of parallel chords with said outer ring, and each said rod being of sufficient size to provide support for the tubes in the tube rows adjacent said rod.

4,127,166

NON-PNEUMATIC BICYCLE TIRE

Ransome J. Wyman, 4676 Admiralty Way, Marina del Rey, Calif. 90291

Filed Dec. 27, 1976, Ser. No. 754,595
Int. Cl.[2] B60C 7/00
U.S. Cl. 152—323 **1 Claim**

1. A bicycle tire for use on a wheel rim having a pair of laterally spaced bead seats, each having an outer side wall and a circumferential channel separating the bead seats, said outer side walls merging into rolled-over outer edges, said tire comprising:

a solid, monolithic tire body made of urethane elastomer, having a pair of laterally spaced bead shoulders that extend down into said wheel rim and lie against said outer side walls, said bead shoulders merging into curved surfaces that lie against said rolled-over outer edges of the rim;

the cross-sectional configuration of said tire being generally circular, with a tread on the outer periphery thereof; and

a tunnel formed in the inside surface of said tire body between said bead shoulders, said tunnel being formed with outwardly converging, substantially straight sides, and extending radially outward beyond the radial dimension of the wheel rim;

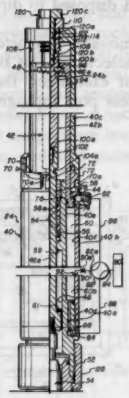
said tunnel being adapted to cooperate with the channel of the wheel to form a void that allows the tire body to collapse locally under excessive impact load forces so as to cushion the blow.

4,127,167

LUBRICATOR FOR MOVING WELL EQUIPMENT THROUGH FLOW CONDUCTOR

Henry P. Arendt, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 21, 1977, Ser. No. 817,514
Int. Cl.[2] E21B 19/16
U.S. Cl. 166—85 **10 Claims**



1. A lubricator for moving well equipment through a well flow conductor, the lubricator comprising:

housing means including chamber means and longitudinally extending bore means;

piston means disposed in said chamber means;

said piston means being movable to a first position upon pressurization of one portion of said chamber means and being movable to a second position upon pressurization of another portion of said chamber means;

rod means movable through said bore means and including a plurality of segments adapted to be interconnected and disconnected;

coupling means;

each of said rod means segments including at least one means engageable by said coupling means with the distance between adjacent engageable means being not greater than the distance between said first and second positions of said piston means;

means associated with said piston means and extending out of said chamber means;

said coupling means being adapted to engage both of said engageable means of said rod means and said means associated with said piston means for rendering said rod means longitudinally movable in response to movement of said piston means;

selectively operable stop means for selectively preventing movement of said rod means with respect to said housing means when such movement is not controlled by movement of said piston means and for limiting movement of said rod means in one direction in the event movement of said rod means can not be controlled by said piston means.

4,127,168

WELL PACKERS USING METAL TO METAL SEALS

Harry R. Hanson, Houston; Hollis A. Baugh, Hempstead, both of Tex.; Thomas W. Childers, Mandeville, La., and James B. Greer, Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

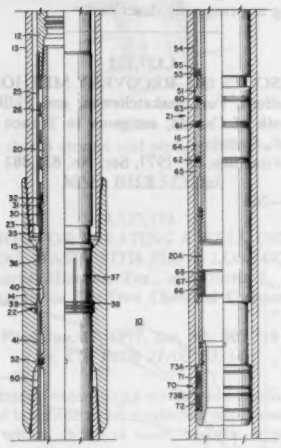
Filed Mar. 11, 1977, Ser. No. 776,799
Int. Cl.[2] E21B 33/128
U.S. Cl. 166—123 **27 Claims**

1. A packer for insertion into a well casing which includes an

anchor collar and a length of polished bore section located at a predetermined depth in the well, the packer comprising:

(a) a hollow, cylindrical mandrel;

(b) a resilient, frusto-conical rigid metal seal ring circumferentially disposed around said mandrel, said ring being sufficiently rigid such that application of an axial compressive force on the ring is capable of sustaining at the circumferential edge surfaces of the ring a transverse sealing force which exceeds said compressive force;



(c) means for retracting said seal ring for passage through said casing;

(d) means for anchoring said packer on said anchor collar, said seal ring being disposed within said length of polished bore section with said packer anchored;

(e) means for expanding said seal ring into sealing engagement with said mandrel and said casing, and for applying sufficient force for effecting fluid tight metal-to-metal seals thereon; and

(f) means for maintaining sealing force.

4,127,169

SECONDARY OIL RECOVERY METHOD AND SYSTEM

E. Sam Tubin, 4419 Fulton Ave., Sherman Oaks, Calif. 91403, and Stewart Tongret, Santa Monica, Calif., assignors to E. Sam Tubin, Sherman Oaks, Calif.

Filed Sep. 6, 1977, Ser. No. 830,894

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—250 **13 Claims**

1. A novel oil well tool comprising an external elongated generally cylindrical shell adapted to be received within a bore hole traversing an oil field and suspended therein, said shell adapted to contain high pressure steam and being substantially impervious to and a barrier against the ambient fluids within a bore hole;

within said shell, electrical heating elements adapted to utilize multiple-phase electrical power for the production of heat to reach temperatures sufficient to convert liquid water into steam, said elements being disposed longitudinally within said shell and adapted to be partially submerged in liquid water;

means for introducing conditioned liquid water into said shell and into contact with said electrodes in the form of a water spray, comprising water conductive means, means for pressurizing the water passing from said conductive means and a plurality of orifices communicating with said pressurizing means for converting the liquid water therefrom into a water spray;

means for establishing and maintaining a reservoir of water within said shell at a level sufficient to partially submerge said electrodes;

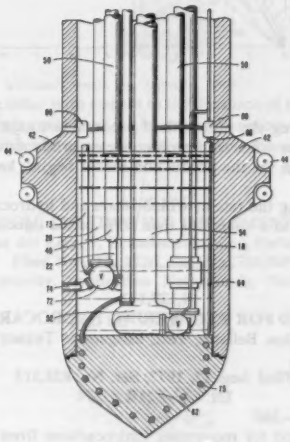
means for providing multiple-phase electric power to said electrodes;

pressure sensitive outlets in said shell whereby high pressure steam generated within the shell can flow through the shell at high pressure;

means for centering said shell within the bore hole and allowing longitudinal movement of said shell therealong;

means for lowering, suspending or raising said shell within the bore hole while steam flows therefrom into the pay zone; and

a device capable of monitoring at least one variable condition in the operation of said tool and adapted to automatically disconnect electric power from a portion of said tool in response to an undesired status of said variable condition and to reconnect that electric power in response to the return of said variable condition to a desired status.



11. The method of stimulating the flow of oil in a formation traversed by a bore hole to cause the migration of the oil in the bore hole where it is recoverable to the surface by conventional techniques, comprising:

generating steam in a closed vessel in situ within the bore hole in heat transfer proximity to the pay zone of the formation by introducing water from the surface down the bore hole and into contact with electrical heating means for converting the water in liquid form to steam;

permitting the steam to pass from the vessel to the pay zone at a predetermined high pressure;

continuously and automatically monitoring the steam pressure at a location adjacent to that at which said steam is produced; and

automatically altering the production of steam by disconnecting electric power from said heating means in response to a pressure value differing from an optimum value by more than a predetermined amount and reconnecting electric power of said heating means in response to the return of said pressure to a desired status.

4,127,170

VISCOUS OIL RECOVERY METHOD

David A. Redford, Fort Saskatchewan, Canada, assignor to Texaco Exploration Canada Ltd., Canada

Filed Sep. 28, 1977, Ser. No. 837,481

Int. Cl.[2] E21B *43/24*; E21B *43/26*

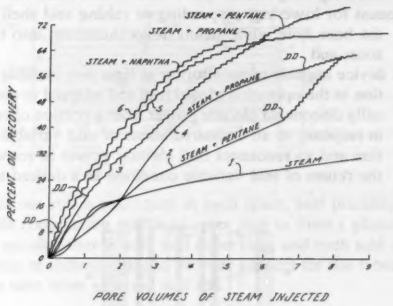
U.S. Cl. 166—252 **16 Claims**

16. A method of recovering viscous petroleum from a permeable, subterranean, viscous petroleum-containing formation

penetrated by an injection means and a production means, comprising:

(a) injecting steam and a C_3 to C_{12} hydrocarbon into the formation at a predetermined pressure below the fracture pressure of the overburden via the injection means;

(b) producing fluids from the formation at a rate below 50 percent of the fluid injection rate;



(c) increasing the rate of fluid production to the maximum safe value when vapor phase steam production from the formation via the production means begins; and simultaneously;

(d) reducing the rate at which steam and hydrocarbons are injected to a value less than 50% of the injection rate of step (a).

4,127,171

METHOD FOR RECOVERING HYDROCARBONS

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 17, 1977, Ser. No. 825,313
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—260 **4 Claims**

1. A method for recovering hydrocarbons from an underground reservoir penetrated by an injection well and a production well which comprises:

(a) establishing a burning zone in said reservoir at the face of said injection well,

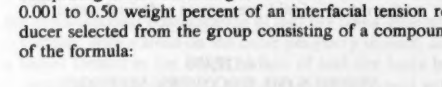
(b) introducing a combustion-supporting gas into said reservoir via said injection well to propagate said zone toward said production well,

(c) terminating the injection of the combustion-supporting gas into the reservoir,

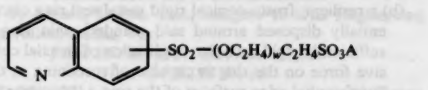
(d) injecting into the said reservoir via said injection well a combustible gaseous mixture comprising a mixture of a combustible gas and a combustion-supporting gas,

(e) effecting combustion of said mixture in the said formation thereby establishing a second burning zone which moves toward the production well and displaces hydrocarbons from the formation, and

(f) recovering the displaced hydrocarbons via the said production well, and wherein after step (e) there is injected into the formation via the said injection a drive fluid comprising water containing dissolved therein from about 0.001 to 0.50 weight percent of an interfacial tension reducer selected from the group consisting of a compound of the formula:



wherein R is an integer of from 2 to about 5, *s* is an integer of from 5 to about 60 and A is selected from the group consisting of hydrogen, sodium, potassium and the ammonium ion, and a compound of the formula:



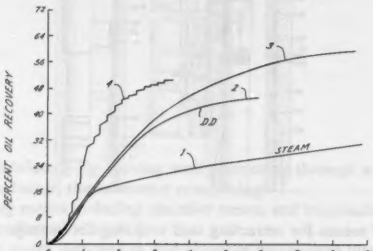
wherein *w* is an integer of from 8 to about 40 and A has the same meaning as previously described.

4,127,172

VISCOUS OIL RECOVERY METHOD

David A. Redford, Fort Saskatchewan, and Phillip J. Cram, Calgary, both of Canada, assignors to Texaco Exploration Canada Ltd., Canada

Filed Sep. 28, 1977, Ser. No. 837,482
Int. Cl.[2] E21B *43/24*
U.S. Cl. 166—261 **22 Claims**



22. A method of recovering viscous petroleum from a permeable, subterranean, viscous petroleum-containing formation penetrated by an injection well and a production well, comprising:

(a) injecting air into the formation via the injection well and recivering air from the formation via producing well to form an air swept zone in the formation;

(b) injecting steam into the air swept zone of the formation and recovering viscous petroleum from the formation to convert the air swept zone into a heated, permeable communication path;

(c) injecting a mixture of air and steam in a ratio of from about 0.05 to about 0.65 thousand standard cubic feet of air per barrel of steam into the communication path at a pressure less than the overburden pressure;

(d) producing fluids from the formation at a rate below 50 percent of the fluid injection rate;

(e) increasing the rate of fluid production to the maximum safe value when vapor phase steam production from the formation via the production well begins; and simultaneously;

(f) reducing the rate at which air and hydrocarbons are injected to a value less than 50% of the injection rate of steps (a).

4,127,173

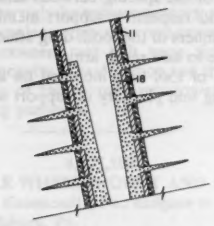
METHOD OF GRAVEL PACKING A WELL

Larry A. Watkins, Abqaiq, Saudi Arabia, and John W. Graham, Alvin, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jul. 28, 1977, Ser. No. 819,800
Int. Cl.[2] E21B *43/04*
U.S. Cl. 166—276 **15 Claims**

1. A method of gravel packing a well penetrating a subterranean formation which comprises placing a pipe in said well,

surrounding said pipe with a particulate material, consolidating said particulate material to form a self-sustaining, permeable



consolidated sheath around said pipe, and thereafter removing said pipe.

4,127,174

METHOD FOR TREATING A WELL USING A CHEMICAL WASH WITH FLUID LOSS CONTROL

James R. Sharpe, Houston, Tex., and Dustin L. Free, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 17, 1977, Ser. No. 807,718
Int. Cl.[2] E21B *21/00, 33/14*
U.S. Cl. 166—291 **8 Claims**

1. In a method of cementing a conduit in a borehole, wherein a zone in said borehole to be contacted with cement slurry is first flushed with a chemical wash, and the cement slurry is thereafter injected into said zone, said chemical wash being of the type containing water and as an active surfactant component, at least one of (1) at least one surfactant to remove water based drilling muds from a borehole or (2) at least one surfactant to enhance the bonding of cement to the walls of a borehole or to the walls of the conduit to be cemented in said borehole, the improvement which comprises:

dispersing in said wash a heterogenous mixture of distinct particles comprising both a first particulate oil soluble resin which is friable and a second particulate oil soluble resin which is pliable, wherein the size of said friable particles ranges from about 0.5 to about 300 microns and the size of said pliable resin particles ranges from about 0.05 to about 30 microns, in amounts effective to impart fluid loss control to said wash;

injecting said wash into and through said zone; and

injecting said cement slurry into or through said zone.

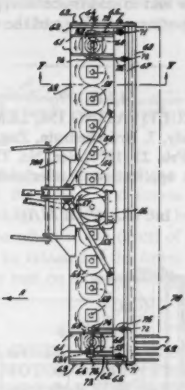
4,127,175

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Nov. 9, 1976, Ser. No. 740,202
Claims priority, application Netherlands, Nov. 12, 1975, 7513213
Int. Cl.[2] A01B *33/06, 27/00*
U.S. Cl. 172—50 **13 Claims**

1. A soil cultivating implement comprising a frame and a row of soil working rotors supported on a portion of said frame, said rotors being mounted on corresponding upwardly extending shafts and driving means connected to rotate said rotors about axes defined by said shafts, soil crumbling means interconnected to said frame and positoned to the rear of said rotors, said crumbling means comprising a plurality of elongated soil contacting elements on respective supports and said elements extending substantially horizontally to the rear of said supports, said driving means comprising eccentric transmissions that are connected to said supports and said elements being pivoted up and down by said driving means via said transmissions and displaced in relative opposite directions to perform reciprocatory and/or vibratory movements against the soil previously worked by said cultivating means during operation, said supports being held between arms that are pivotably connected to said frame, two of said supports being pivoted to said arms at different horizontal levels and one in



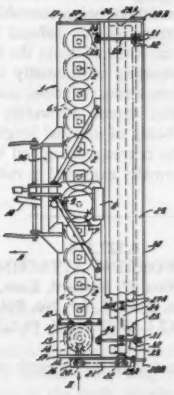
front of the other with respect to the direction of travel, setting means retaining said arms in chosen angular positions about the axes of the pivotal connection of said arms to said frame.

4,127,176

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Nov. 12, 1976, Ser. No. 741,509
Claims priority, application Netherlands, Nov. 12, 1975, 7513215
Int. Cl.[2] A01B *33/06*
U.S. Cl. 172—51 **7 Claims**



1. A cultivating implement comprising a frame and a row of cultivating members rotatably mounted on corresponding upwardly extending shafts journalled in a portion of said frame, a coupling member at the forward portion of said frame connectable to a prime mover and transmission means engaging said cultivating members to rotate same about axes defined by said shafts, an elongated, movable crumbling member pivoted to said frame at the rear of said row, said crumbling member being driven by further transmission means interconnectd to at least one of said shafts and tool means on said crumbling member being driven to further work soil previously worked by the cultivating members, an elongated supporting member positioned to the rear of said crumbling member and said supporting member being positioned to bear on

the ground, said crumbling member and said supporting member being pivotably interconnected to one another and means retaining each of the members in a number of chosen positions relative to the other and to said frame to regulate the working depths of said cultivating members and the soil working effect of said tool means.

4,127,177

SOIL CULTIVATING IMPLEMENTS

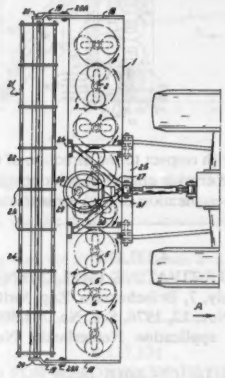
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 23, 1977, Ser. No. 771,117

Claims priority, application Netherlands, Feb. 23, 1976, 7601786

Int. Cl.[2] A01B *33/06*

U.S. Cl. 172—59 **13 Claims**



1. A soil cultivating implement comprising frame means and a plurality of soil working members mounted on said frame means, each of said members being rotatable about a corresponding upwardly extending axis defined by a shaft and a carrier support being mounted adjacent the lower end of said shaft, said support extending substantially horizontally from said shaft means and comprising two tines, said tines being held by respective arms that extend outwardly from said shaft means and said arms being of unequal length, driving means connected to rotate the corresponding soil working member, whereby said arms normally extended in radial aligned directions from the shaft.

4,127,178

EARTH WORKING ATTACHMENT

Calvin B. Blair, P.O. Box 97, Barnard, Kans. 67418

Filed Jun. 8, 1977, Ser. No. 804,578

Int. Cl.[2] A01B *21/04, 49/02*

U.S. Cl. 172—198 **7 Claims**

1. A tooth drag attachment for an earth working apparatus and comprising:

(a) a plurality of laterally spaced reach arms each having a forward end portion thereof capable of being mounted on a frame of an earth working apparatus and extending rearwardly from the frame;

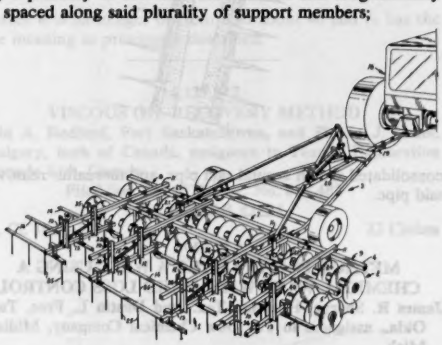
(b) a plurality of support members each positioned in spaced relation with and below a respective one of said reach arms;

(c) a leading hanger and a trailing hanger arranged as a unit for each of said reach arms and said associated support member therebelow, said leading hangers and said trailing hangers each having an upper end portion thereof pivotally mounted on said respective reach arm and a lower end portion thereof pivotally mounted on said respective support members;

(d) means on each of said leading hangers for permitting adjustment of the spacing between said respective reach arm and said respective support member;

(e) means on each of said trailing hangers for permitting adjustment of the spacing between said respective reach arm and said respective support member whereby said support members of the tooth drag attachment are adjustable relative to said reach arms;

(f) a plurality of tool bars mounted on and longitudinally spaced along said plurality of support members;



(g) a plurality of ground engaging teeth for and mounted on each of said tool bars and spaced transversely of the direction of travel of the earth working apparatus; and

(h) an elongated resilient member for each of said reach arms and said associated support member, said resilient members each having a lower end portion thereof connected to said respective support member, said resilient members each having an upper end portion thereof connected to said respective reach arm.

4,127,179

SCRAPER MECHANISM FOR DISK GANG HARROWS

Evert J. Heersink, Hinsdale; Eugen J. Birkenbach, Park Ridge; Daniel M. Brown, Villa Park, and Thomas E. Schroeder, Burr Ridge, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 22, 1976, Ser. No. 743,837

Int. Cl.[2] A01B *15/16*

U.S. Cl. 172—565 **19 Claims**

1. The combination with an agricultural implement having a generally horizontal transversely extending disk-carrying frame member, and a plurality of transversely spaced earth-working disks operatively suspended from said frame member, of scraper means for said disks, said scraper means comprising a scraper support mounted on said frame member and substantially coextensive therewith, a scraper unit for each of said disks, each unit comprising a scraper arm formed of spring steel stock effectively depending from said scraper support and having a scraper edge on its lower end and designed for scraping cooperation with one side of its associated disk, the upper

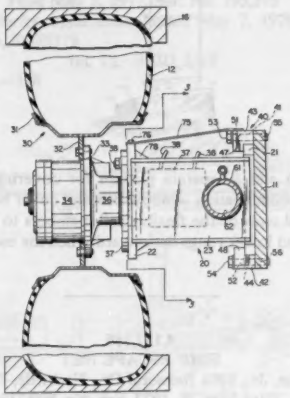
end of said scraper arm being formed with a laterally turned section of concavo-convex configuration and the concave side of which opposes the scraper support, and a fastening bolt projecting through the apex region of said laterally turned section and also through the scraper support, said end and said support having complementary structure preventing rotational movement therebetween, said bolt upon tightening thereof decreasing the concavity of said section and thus swinging the depending portion of the scraper arm toward said disk for pressure regulating purposes.

4,127,180

TRACK VEHICLE WHEEL MOUNT AND ADJUSTMENT

Allen B. Coffman, Greencastle, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

Filed Feb. 23, 1977, Ser. No. 771,106
Int. Cl.² B62D *11/00*
U.S. Cl. 180—6.48 **14 Claims**



1. Apparatus for adjustably mounting a driving wheel and support of a track vehicle comprising:

a generally planar chassis plate,

a mount assembly comprising:

a slide plate in planar engagement with said chassis plate,

a hub mount plate in spaced relation to said slide plate,

means connecting said slide plate to said hub mount plate,

a wheel and hub assembly having the hub thereof secured to said hub mount plate,

a drive motor between said slide plate and said hub mount plate and drivingly connected to said wheel and hub assembly,

means for supporting said slide plate in planar engagement with said chassis plate and for selectively permitting or preventing movement of said side plate relative to said chassis plate, and

means for moving said slide plate relative to said chassis plate for adjusting tension of a track encompassing said wheel.

4,127,181

WATER DRIVE SYSTEM FOR A CENTER PIVOT IRRIGATION UNIT OR THE LIKE

Kenneth E. Arndt, Columbus; Lonnie E. Otto, Jr., Lindsay, and David A. Siekmeier, Columbus, all of Nebr., assignors to Lindsay Manufacturing Company, Lindsay, Nebr.

Division of Ser. No. 706,475, Jul. 19, 1976, Pat. No. 4,074,783.
This application Mar. 28, 1977, Ser. No. 781,577
Int. Cl.² B05B *3/12*
U.S. Cl. 180—14 R **10 Claims**

1. In a water drive system for propelling a wheeled tower for a center pivot irrigation system in which a string of pipe is supported at intervals on such wheeled towers and extends outwardly from and pivots about a center pivot, the improvement comprising a brake system for such a tower to prevent it from running ahead of the water drive on a downhill slope, including a water-operated power unit for rotating at least one wheel of the tower, a linkage between the power unit and the

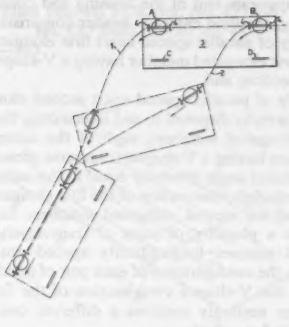
wheel for transmitting the thrust of the power unit to the wheel, a brake on the wheel, and means responsive to the operation of the linkage to deactivate the brake in response to the resistance of the wheel to the thrust of the linkage so that the brake will not be released if the tower rolls ahead of the thrust of the power unit on a downhill slope.

4,127,182

TRANSPORT SYSTEM FOR AUTOMATICALLY CONTROLLED MOTOR-DRIVEN TRANSPORT CARS AND TRANSPORT CAR FOR SAID TRANSPORT SYSTEM

Ulf L. Thole, Västra Frölunda, Sweden, assignor to AB Volvo, Göteborg, Sweden

Filed May 27, 1977, Ser. No. 801,368
Claims priority, application Sweden, Jun. 1, 1976, 7606169
Int. Cl.² B60K *26/00*
U.S. Cl. 180—98 **3 Claims**



1. Transport system, in which one or more motor-driven cars are guided along a path with means emitting signals along the path, said signals controlling the state of motion of the cars, the signal-emitting means comprising two electrical control wires (1, 2), placed in the path, which emit various control signals for controlling individual wheels on the cars (3), said wheels being individually steered and driven, a front and a rear drive wheel each having an individual drive motor, steering motor and antenna equipment, at least one additional wheel which is freely rotatably and freely swingably journalled, and control equipment (10, 11, 12, 13, 14) disposed to regulate the relative speeds of the drive wheels (A,B) depending on the difference between the steering angle deflections (α, β) of the drive wheels; characterized in that the control equipment has a computing unit (11) into which the command speed V_0 for the car (3) is fed, and the unit computes the relationship between the desired values for the speeds V_A and V_B respectively, of the drive wheels, according to the formula $V_A \cdot \text{Cos}\alpha = V_B \cdot \text{Cos}\beta$, where α and β are the steering angle deflections for the

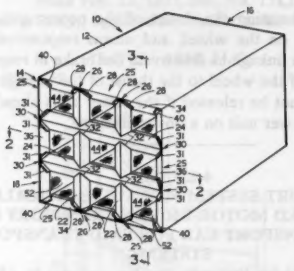
respective drive wheels (A,B) from a connecting line (L) between the drive wheels.

4,127,183

SILENCER DEVICE

Tom E. McLarty, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Feb. 17, 1978, Ser. No. 878,818
Int. Cl.[2] G01S 9/66
U.S. Cl. 181—224 **9 Claims**



1. A silencer device for attenuating fluid borne noises, comprising:

(a) a flow through housing having an open upstream end for the entrance of a fluid into the silencer device and an open downstream end for the exhausting of the fluid from the silencer device coaxial with the open upstream end;

(b) a fluid entrance header disposed coextensively across the open upstream end of the housing and connected to the housing, the fluid entrance header comprising:

a plurality of parallel spaced apart first elongated members, each first elongated member having a V-shaped transverse cross-section; and,

a plurality of parallel spaced apart second elongated members normally disposed to and intersecting the plurality of first elongated members, each of the second elongated members having a V-shaped transverse cross-section with an included angle generally equal to the included angle of the V-shaped cross-section of the first elongated members, each of the second elongated members having formed therein a plurality of pairs of transversely aligned V-shaped notches longitudinally spaced apart along its length, the configuration of each pair of notches conforming to the V-shaped cross-section of the first elongated member nestingly receives a different one of the first elongated members;

the first elongated members and second elongated members of the entrance header cooperate to define a plurality of generally rectangular entrance apertures.

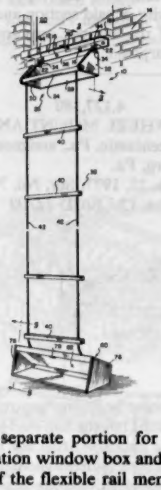
4,127,184

COMBINATION FLOWER BOX AND FIRE ESCAPE

Robert W. Strohmeyer, 214 Bethel Rd., Mooresville, Ind. 46158

Filed Dec. 15, 1977, Ser. No. 860,695
Int. Cl.[2] E06C 9/14
U.S. Cl. 182—70 **15 Claims**

1. A combination window box and fire escape comprising means for anchoring the escape assembly to a wall adjacent an emergency exit, the anchor means providing a first pair of attachment points and a second attachment point, a top rung for the escape, top rung support means including an elongated center portion lying adjacent the wall and outstanding end portions extending perpendicular to the wall for supporting the top rung therebetween outwardly from the wall, the top rung support means being supported by the anchor means, a plurality of lower rungs, a pair of flexible rail members for supporting the lower rungs of the escape, each of the lower rungs being attached to the flexible members to extend generally perpendicularly therebetween in spaced-apart relation to the next superjacent rung, a combination window box and cover for the escape when stored, the combination window box and cover being removably secured to the second attachment point when in the escape storing position, and including a window



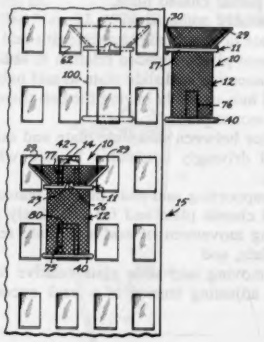
box portion and a separate portion for covering the stored escape, the combination window box and cover being secured to the distal ends of the flexible rail members to pull the rail members and lower rungs downward when the escape is being deployed.

4,127,185

FIRE ESCAPE NET

Henry Ritter, Jr., 1001 Balmoral Dr., Nashville, Tenn. 37220

Filed May 26, 1977, Ser. No. 800,719
Int. Cl.[2] A62B 1/22
U.S. Cl. 182—140 **7 Claims**



1. An emergency escape device comprising:

(a) a frame having a pair of opposed arms spaced apart sufficiently in an open position to receive the passage of a person between said arms,

(b) a receptacle of flexible material having a circumferentially closed side wall, a resilient, closed bottom wall, and a top opening defined by the top margin of said side wall,

(c) said top opening being large enough for the passage of a person therethrough and said receptacle being large enough to receive said person,

(d) means securing said receptacle within said frame,

(e) support means comprising an elongated horizontal shaft

member adapted to project through an opening in the exterior wall of a building,

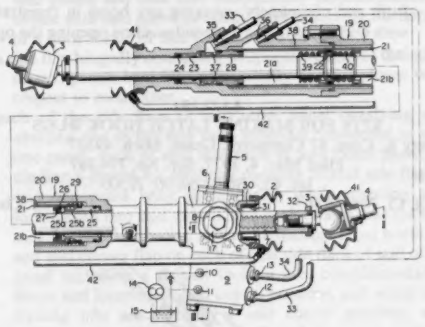
(f) hinge means joining said opposed arms and journaled upon said shaft for longitudinal reciprocal movement of said frame upon said shaft between a retracted position within said building and a protracted position outside of said exterior building wall,

(g) said hinge means being also journaled upon said shaft for pivotal movement of said frame arms about said shaft to permit said opposed arms to move toward each other to collapse said receptacle in an inoperative position and to move away from each other to an operative open position.

4,127,186
POWER STEERING DEVICE FOR AUTOMOTIVE VEHICLES

Kimio Koyano, and Yoshihiko Toshimitsu, both of Asaka, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1977, Ser. No. 793,373
Claims priority, application Japan, May 7, 1976, 51-51778; May 7, 1976, 51-51779
Int. Cl.² B62D *5/10*
U.S. Cl. 180—148 **5 Claims**



1. A power steering device for automotive vehicles, comprising:

a steering gear box secured to the vehicle chassis;

a pinion shaft supported by said gear box and associated with the steering wheel of the vehicle;

a rack rod formed with a rack in meshing engagement with said pinion shaft between a pair of right and left steerable wheels of the vehicle in linked relation therewith;

an oil-hydraulic power actuator on said rack rod to drive the latter axially thereof;

a first guide member slidably supporting one end portion of said rack rod and allowing the latter to laterally oscillate; and

a second guide member in said gear box at the other end portion of said rack rod to slidably support the other end portion of said rack rod, and means for increasing backlash between the intermeshing rack and pinion teeth solely when the amount of steering motion approaches its maximum to place the other end portion of said rack rod close to said gear box.

4,127,187
PACKAGE AND METHOD OF PACKAGE USE

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 475,979, Jun. 3, 1974, abandoned. This application Apr. 6, 1976, Ser. No. 674,185
Int. Cl.² B65D *25/08*
U.S. Cl. 206—219 **9 Claims**

1. A package comprising:

A container having side segments which are substantially vertical, said side segments defining a lower portion, an upper portion, and an intermediate portion of the container with said intermediate portion being located between said lower portion and said upper portion, said intermediate portion consisting of an annular frustoconical flange extending outwardly and upwardly from a smaller diameter of said lower portion to a larger diameter of said upper portion, said frustoconical flange extending outwardly at a greater angle from vertical than either the upper or lower portions of the container and being sized to support a portion of a rupturable partition and a closure member thereon;

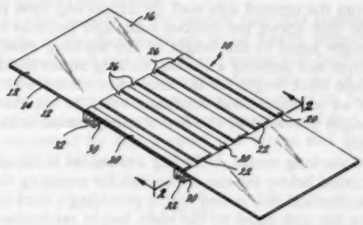
a rupturable sealing partition adhesively bonded to the inside surface of said container and extending across said container at said intermediate portion thereof to isolate said lower portion of said container from said upper portion thereof, said rupturable sealing partition being positioned to permit at least partial support by said annular frustoconical flange of force directed toward said lower portion of said container and exerted against said rupturable sealing partition;

a closure member inserted into said container at a position above said rupturable sealing partition with a continuous edge portion of said rupturable sealing partition being positioned between the inside of said container and the perimeter of said closure member and said closure member forming a friction fit with the inside of said continuous edge portion.

4,127,188
FRANGIBLE DOOR CONTAINER

James J. Heaney, Glendale, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Feb. 10, 1978, Ser. No. 877,026
Int. Cl.² B65D *85/30, 85/48*
U.S. Cl. 206—453 **22 Claims**



1. A packaging container adapted for shipping frangible items in spaced relationship while leaving flat sides of the items exposed to view comprising:

first elongated paperboard sheet means including a unitary longitudinal sheet of paperboard adapted to bend about edges of said frangible items, said sheet having a longitudinal dimension, said means further including a plurality of relatively narrow paperboard strips arranged generally parallel to and spaced from each other and disposed fastened to said longitudinal sheet defining grooves for receiving individual edges of said frangible items and for maintaining said frangible items in spaced relationship, said longitudinal sheet of paperboard having outer portions adapted for bending over shorter edges of said frangible items;

said paperboard sheet means further including rigid support means secured opposite said paperboard sheet from said narrow paperboard strips, for distributing the load of said frangible items transversely across said paperboard sheet means, said rigid support means including a rigid support member oriented substantially perpendicular to said longitudinal dimension;

means for tightening said sheet means around said frangible items; and

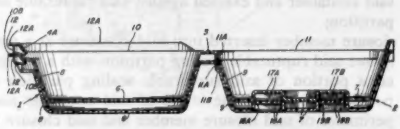
second elongated paperboard sheet means adapted for engaging frangible item edges opposite the edges received by said grooves of said first sheet means, said second sheet means including a longitudinal sheet of paperboard substantially similar to said first means longitudinal sheet of paperboard having outer portions adapted for bending over the shorter edges of said frangible items.

4,127,189

PLASTIC FOOD CONTAINER

George K. Shumrak, Natick, and Paul Davis, Swampscott, both of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Filed Jun. 17, 1977, Ser. No. 807,588
Int. Cl.[2] B65D *21/02, 41/16, 43/16*
U.S. Cl. 206—520 **6 Claims**



6. A deformable food container comprising

a bottom dish and a cover interconnected by a hinge formed as in integral part of the dish and cover and made of a foam plastic material,

said dish and cover having bottom and top walls respectively and each having tapered side walls that flare outwardly from the respective bottom and top walls, said side walls each terminating in a rim,

a first stacking means formed at the rim of the cover providing a finite stack height for the cover when nested with the cover of an identical food container,

a pedestal formed in the bottom wall of the dish and spaced from the tapered side wall for supporting food placed in the dish above the bottom wall, said pedestal having a height equal to the height of the stacking means in the cover and defining a second stacking means and having a finite stack height for the dish when nested with the dish of an identical food container equal to the finite stack height provided by the first stacking means in the cover, and

third stacking means, including a shoulder in the side wall, formed below the rim of the dish for engaging the rim of an identical dish nested with it providing a stacking height for the dish equal to the stack height established by the pedestal.

4,127,190

DISPENSER FOR DISPENSING PILLS OR TABLETS IN A PREDETERMINED ORDER

Robert M. Sunnen, St. Louis County, Mo., assignor to The Emko Company, St. Louis, Mo.

Filed Dec. 13, 1976, Ser. No. 750,172
Int. Cl.[2] B65D *83/04*
U.S. Cl. 206—535 **20 Claims**

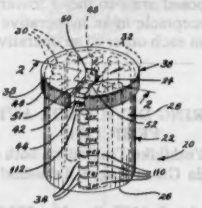
20. A pill dispenser for use in dispensing pills on a schedule over an extended period, said dispenser including,

a container member having a surface portion with a plurality of bores extending thereinto, the depth of each of said bores being less than the depth of said container member, said bores being in an annular arrangement with the space between two adjacent bores of said bores being greater than the space between at least two other adjacent ones of said bores to define a blank station on said surface portion, each of said bores being of a size to hold a plurality of pills arranged in a column therein to be individually sequentially dispensed therefrom,

a closure member mounted on said container member, said closure member having a round portion positioned adjacent to the surface portion of said container member and extending over said surface portion to cover said bores,

an opening through said closure member,

cooperatively engageable means on said container member and on said closure member permitting relative movement therebetween whereby the opening can be sequentially placed in registration individually with said blank station



and with each of said bores to permit sequential dispensing of individual pills from each of said bores, and,

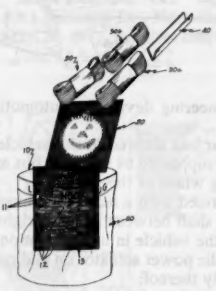
means in the closure member positioned for movement in the opening therein, said means being movable between a first position closing the opening to prevent dispensing therefrom and completely covering any bores in registration with said opening and a second position opening the opening.

4,127,191

KITS FOR MAKING LATCH HOOK RUGS

Jerry K. Cave, 87 Commerce, Grant, Mich. 49327

Filed Mar. 4, 1977, Ser. No. 774,387
Int. Cl.[2] B65D *69/00, 71/00*
U.S. Cl. 206—574 **7 Claims**

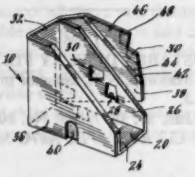


1. A kit for making latch hook rugs comprising: a container; at least two different yarns contained in said container, said yarns being of continuous lengths which can be cut into a plurality of shorter lengths appropriate for latch hooking; unpatterned canvas having a plurality of first generally parallel strands joined to a plurality of second strands, said second strands being parallel to one another and generally perpendicular to said first strands to define a plurality of openings arranged in rows and columns through which yarn can be hooked and being contained in said container; a gauge for gauging longer lengths of yarn for cutting into shorter lengths of yarn appropriate for latch hooking, said gauge being contained in said container; a separate pattern including indicia identifying which yarn is to be hooked into which opening in said canvas and being contained in said container whereby a hobbyist acquiring said container and its contents can cut said yarns into shorter lengths using said gauge and can then latch hook said yarns into said canvas in accordance with said indicia on said pattern.

4,127,192
CORNER PAD

David R. Card, Memphis, Tenn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,096
Int. Cl.[2] B65D *85/30, 85/48*
U.S. Cl. 206—586 4 Claims



1. A corner pad construction for a door frame or the like comprising:

a central portion defining the rear of said pad construction including a first and second rectangular panel bent into planes substantially perpendicular to each other,

a side flap hingedly connected to opposite edges of one of said panels and bent into substantially parallel planes to define with said panel an opening for receiving the corner of a door frame or like item,

a side flap hingedly connected to opposite edges of the other of said panels bent into substantially parallel planes with respect to each other,

each of the side flaps of said other panel overlying and abutting one of the side flaps hingedly connected to said one panel, each of said side flaps of said other panel including a cutout for applying pressure to said side flap of said one panel lying therebeneath while inserting said locking tab into said cutout, and each of said side flaps of said one panel including a pair of adjacent cutout portions, and said corner flap on each of said side flaps of said other panel including a pair of locking tabs complemental in shape and location to said cutout portions, and when said locking tabs are inserted in said cutout portions, said corner portion including an edge defining an upright obstruction to a door frame or the like inserted within said opening, and means on each of said side flaps connected to the other of said panels for securing each of said side flaps to one of said side flaps connected to said one panel, and means including a corner portion on each of said side flaps of said other panel defined by at least one angular line of weakness whereby said corner portion of said side flap can be folded over the abutting side flap of said one panel to sandwich the same between said side flap of said other panel and said portions, at least one cutout in said side flap of said one panel, and at least one locking tab on said corner portion insertable within said cutout.

4,127,193
CARROT SORTING APPARATUS

Harry L. Richardson, 19710 Pinehurst La., Salinas, Calif. 93901

Filed May 16, 1977, Ser. No. 796,982
Int. Cl.[2] B07B *13/04*
U.S. Cl. 209—539 3 Claims

1. A sorting apparatus for sorting carrots by length, said apparatus comprising in combination:

a. a source of carrots;

b. a feed chute means for receiving the carrots from said source, said feed chute including means for serially aligning the carrots along their longitudinal axis;

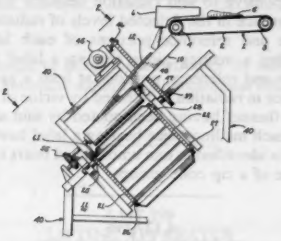
c. roller means for conveying the carrots from said feed chute;

d. conveyer means for transporting the carrots conveyed by said roller means, said conveyer means including a plurality of flights spaced apart from and parallel to one another and defining opposed sides of a compartment having open bottom and top sides;

e. plate means disposed in vertical proximity to said roller means and adjacent the lower edges of said flights for supporting the carrots disposed within said compartments and transported by said conveyer means, said plate means including a terminal end downstream from said roller means;

f. baseboard means disposed along one side of said conveyer means for referencing the location of the carrots disposed within each compartment;

g. framework means for orienting said plate means and at least the part of said conveyer means adjacent said plate means at an angle with respect to horizontal to urge sliding of the carrots to said baseboard means;



h. strip means extending downstream from said terminal end in general alignment with said baseboard for supporting one end of the carrots disposed within said compartments;

i. support rod means extending downstream from said terminal end and parallel to said strip means for providing a second point of support for the carrots disposed within said compartments; and

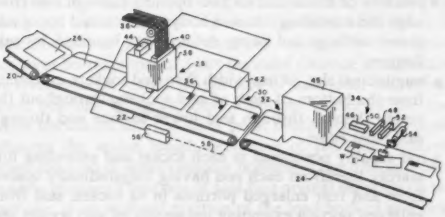
j. bin means for receiving the carrots no longer supported by said support rod means;

whereby, after passage of the carrots past said terminal end, any carrots of insufficient length to be jointly supported by said strip means and said support rod means will drop through the open bottom side of said compartment into one of said bin means and the remaining carrots will continue to be transported within their respective compartments until they are no longer supported by said support rod means and drop into another of said bin means.

4,127,194
DEVICE FOR SORTING MAIL ACCORDING TO ZIP CODES

Rolf B. Erikson, Lincolnwood, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 4, 1977, Ser. No. 784,407
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—578 13 Claims



1. In a mail sorting system in which preaddressed labels are grouped according to zip codes and applied to mailing pieces moving along a feed path, and in which selected labels bear

indicia representative of a zip code group, a system for sorting mailing pieces according to zip code groups and in which each label is treated as having a coatable portion and a reference portion, said system comprising:

an applicator responsive to the zip code group indicia on a label for applying a radiation-emissive coating on the coatable portion of the label;

a label position sensor disposed in the feed path of mailing pieces and downstream of said applicator for generating a first label position signal when the reference portion of each label is at a radiation detection station and for generating a second label position signal when the coatable portion of each label is at the radiation detection station;

a radiation detector disposed at the radiation detection station for detecting radiation from the reference and coatable portions of each label in response to said first and second label position signals, respectively; and

means responsive to said radiation detector for comparing the difference in the detected levels of radiation from the coatable and reference portions of each label and for identifying a mailing piece bearing a label from whose coatable and reference portions at least a predetermined difference in radiation is detected by virtue of the coatable portion thereof having been coated by said applicator,

whereby each mailing piece bearing a label having a coated portion is identified as one whose label bears indicia representative of a zip code group.

4,127,195

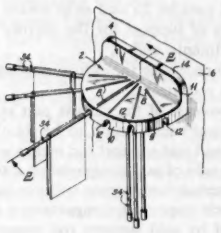
CLOTHES DRYER RACK

Simon Portnoy, 300 Edward St., Roslyn Heights, N.Y. 11577

Filed Feb. 16, 1977, Ser. No. 769,294

Int. Cl.[2] A47F *5/08*

U.S. Cl. 211—100 **5 Claims**



1. A dryer rack comprising:

a generally planar body member having means for mounting the same on a support to extend generally horizontally therefrom and having spaced upper and lower surfaces and a front edge; first abutment means in said socket intermediate the ends thereof positioned therein to engage said rear enlarged portion when said rod is slid outwardly of its socket by an amount to remove said front enlarged portion from said sockets to prevent further forward movement of said rod;

a plurality of horizontal sockets opening through said front edge and extending into said body between said upper and lower surfaces and being defined and bounded by said flanges;

a longitudinal slot, of less width than said sockets, extending from the bottom of each of said sockets, throughout the length thereof, through said lower surface and through said front edge;

a rod slidably positioned in each socket and extending forwardly therefrom each rod having longitudinally spaced front and rear enlarged portions in its socket, said front enlarged portion extending outwardly of said socket and said rear enlarged portion bearing against a top wall of said socket to thereby hold said rod in a horizontal position, said enlarged portions being of greater width than said slot and separated by a rod portion sufficiently narrow to pass freely through said slot; said body member comprising a relatively thin walled upper portion defining said upper surface with an integral flange depending therefrom to define said front edge, a plate-like bottom portion defining said lower surface, being secured to the lower edge portion of said flange, and having integral upstanding flanges defining the lateral sides of said sockets.

4,127,196

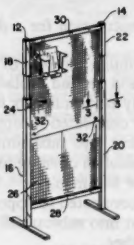
ADJUSTABLE DISPLAY FIXTURE

Ralph E. Boucher, Mahwah, N.J., assignor to Melrose Displays, Inc., Passaic, N.J.

Filed Jun. 13, 1977, Ser. No. 805,795

Int. Cl.[2] A47F *5/10*; A47G *5/00*

U.S. Cl. 211—207 **6 Claims**



1. An adjustable display fixture comprising: a pair of spaced apart rigid side supports each having a base member and an extension member arranged in a telescoping relationship;

a first planar panel member having perforations formed therein and fixedly secured relative to said spaced apart base members;

a second planar panel member having perforations formed therein and fixedly secured relative to said spaced apart extension members in a plane offset from the plane of said first panel member, said second panel member at least partially overlapping said first panel member; and

means for telescopically positioning said extension members relative to said base members including a removable pin member for insertion into aligned perforations in the overlapping portion of said panel members.

4,127,197

DUAL-PURPOSE SKYLINE LOG-YARDING CARRIAGE

Eston A. Dumont, Rte. 1, Box 142, Glide, Oreg. 97443

Filed Mar. 24, 1977, Ser. No. 780,855

Int. Cl.[2] B66C *21/00*

U.S. Cl. 212—122 **9 Claims**

1. A skyline carriage for movement along a fixed skyline cable under the influence of a power winching means in a gravity or non-gravity skyline yarding system comprising:

at least three cable drums on said carriage, each storing a length of cable,

shaft means on said carriage wherein said shaft means comprises three separate parallel transverse shafts, each mounted at a different vertical level on said carriage, each of said transverse shafts mounting a different one of said three drums and mounting said three drums in positions such that a first said drum can pay out and take in cable in a direction forwardly of said carriage generally parallel to said skyline and toward said power winching means, a second of said drums can pay out and take in cable in a direction generally downwardly from said carriage, and a third of said drums can pay out and take in cable alternatively either in a direction forwardly or in a direction rearwardly from said carriage generally parallel to said

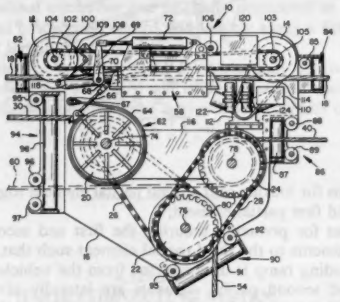
skyline, with all three drums operating as described simultaneously without conflict of their respective cables,

interconnecting means on said carriage drivingly interconnecting all three said drums so that rotation of one of said three drums in either direction of rotation causes a corresponding rotation of the other two of said three drums in a corresponding direction of rotation,

drum brake means on said carriage selectively operable to prevent rotation of all three said drums,

and two-way cable clamp means on said carriage selectively operable to clamp said carriage to said skyline cable to prevent movement of said carriage in either direction along said skyline cable,

the cable on said third drum when passing rearwardly from said carriage passing from the same one of the upper and



lower sides of said third drum as the cable on said first drum, and the cable on said third drum when passing forwardly from said carriage passing from the opposite one of the upper and lower sides of said third drum from the cable on said first drum, whereby the cable on said second drum can be raised and lowered under power when said cable on said third drum passes either forwardly or rearwardly from said carriage,

a first fairlead on the forward end of said carriage for guiding the cable forwardly of the first drum and carriage, a second fairlead on the forward end of said carriage vertically separated from said first fairlead for guiding a cable forwardly from said third drum and carriage without conflict with said first drum and its cable, and a third fairlead on the rear end of said carriage for guiding a cable rearwardly from said third drum and carriage.

4,127,198

DEVICE FOR POSITIONING A METAL SHEET ON A TRANSFER CONVEYOR

Rino Morini, Via San Francesco 35, Imola, (Bologna), Italy

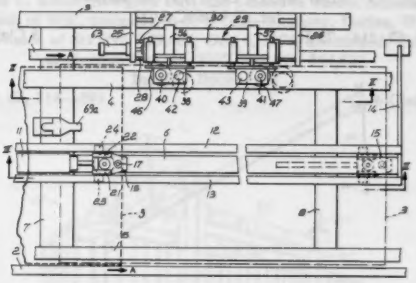
Filed Apr. 8, 1977, Ser. No. 785,994

Claims priority, application Italy, Apr. 14, 1976, 3403 A/76

Int. Cl.[2] B65Q *47/91*

U.S. Cl. 214—1 BT **8 Claims**

1. A device for positioning a metal sheet on a transfer conveyor, comprising a support surface for the sheet lying substantially in the plane of the conveyor, guides extending parallel to the conveyor, a carriage slidably supported on said guides, sheet gripping means supported on said carriage and mobile perpendicularly to the carriage sliding direction, reference stops for the longitudinal and transverse positioning of said sheet relative to the conveyor feed direction, means for moving said gripping means between a position in which they pick up the sheet on said surface and a position in which they abut against said transverse reference stops, and drive means



for said carriage, to bring the sheet, after its transverse positioning, into abutment against the longitudinal reference stops.

4,127,199

LIFTING APPARATUS

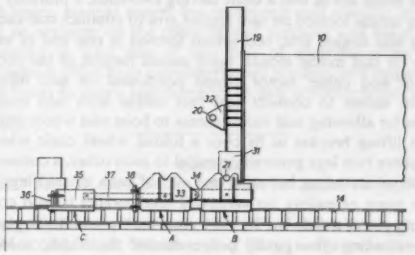
Percy A. Clethero, Gainford, England, assignor to Sparrows Contract Services Limited, Bristol, England

Filed Mar. 25, 1977, Ser. No. 781,192

Claims priority, application United Kingdom, Jan. 25, 1977, 2864/77

Int. Cl.[2] B65G *7/00*

U.S. Cl. 214—1 H **6 Claims**



1. Apparatus for use in raising and tilting a large elongated heavy load having a major length axis, from a generally horizontal attitude to a generally vertical attitude, comprising a carriage movable along a generally horizontal track, support means on said carriage providing two pivotal bearing supports for the load, said supports being spaced apart in the direction of said track, means for controlling the movement of said carriage along said track, and a rocking cradle provided with means for attachment to an end of the load and having two corresponding pivot bearings spaced apart the same distance in a direction transverse to the major length axis of said load, one of said pivot bearings being adjacent a bottom corner of the load when horizontal and the other pivot bearing being positioned adjacent the major length centreline of the load, whereby when the load is approximately horizontal the first said pivot bearing engages a first one of said two pivotal supports on said carriage, in an inclined position of the load both of said bearings engage said two pivotal supports, and in a vertical position of the load the second said pivot bearing engages the second said pivotal support on the carriage and the said first bearing is disengaged from the first pivotal support.

4,127,200

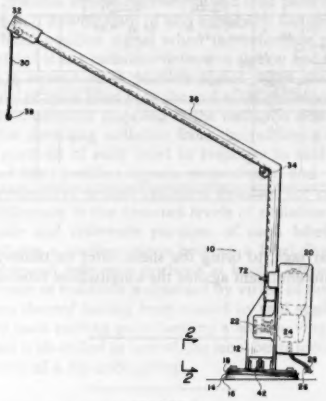
WHEEL CHAIR LIFT DEVICE

Elbert T. Mann, 37 S. 105 E. Pl., Tulsa, Okla. 74128

Filed Sep. 19, 1977, Ser. No. 834,388

Int. Cl.[2] B66C *1/00*

U.S. Cl. 214—75 H **3 Claims**



1. Apparatus for hoisting a wheel chair into and out of an enclosure comprising a swivel base having a stationary section and a section rotatable on said stationary section about a vertical axis; means to secure said stationary section within said enclosure; a motor mount positioned above said rotatable section of said swivel base; means to connect said motor mount to said rotatable section; an angled arm pivotally connected at one end to said motor mount and the other end capable of standing rigidly upright when in use and capable of folding down when not in use; a cable having two ends; a plurality of pulley means located on said angled arm to conduct said cable along said angled arm; reel means formed at one end of said cable on said motor mount; hook means formed at the other end of said cable; motor means positioned on said motor mount; means to connect said reel means with said motor means for allowing said motor means to hoist said wheel chair; and a lifting bracket to fit over a folded wheel chair which comprises two legs generally parallel to each other, a connecting piece extending between one end of each of said legs, a brace piece extending between said legs parallel to said connecting piece, a slide bar slidably mounted on said brace piece and extending divergently perpendicular therefrom, a lock down bar slidably mounted on said slide bar and extending divergently perpendicular therefrom, a clamp means formed near the other end of one of the legs, and an eye formed near the end of the other leg for engaging with said hook means.

4,127,201

COLLAPSIBLE LOADING RAMP OR THE LIKE

Emil Baumann, Niederglatt, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Nov. 15, 1976, Ser. No. 741,978

Claims priority, application Switzerland, Dec. 12, 1975, 16131/75

Int. Cl.[2] B65G *69/28*

U.S. Cl. 214—85 **6 Claims**

1. A collapsible loading ramp comprising:

two lengthwise extending supports arranged in spaced substantially parallel relationship to one another and intended to be secured to a component of a vehicle located in a predetermined plane;

each of the lengthwise extending supports comprising a ramp portion and an on-loading portion;

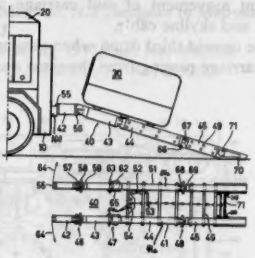
means for adjustably and lockably positionally securing the ramp portion with respect to the plane containing the vehicle component;

means for hingedly connecting the on-loading portion with said ramp portion;

said ramp portion comprising three interconnected partial elements defining first, second and third partial elements;

said first partial element being provided with suspension means for suspending the ramp portion at said vehicle component;

means for hingedly connecting said first partial element at the second partial element;



means for locking said second partial element together with said first partial element;

means for pivotably securing the first and second partial elements to the third partial element such that, when the loading ramp is disconnected from the vehicle, said first and second partial elements are laterally pivotable together into side-by-side relationship with said third partial element;

transverse supports provided between both of said lengthwise extending supports; and

means for securing said on-loading portion in a selected angular relationship with respect to said ramp portion.

4,127,202

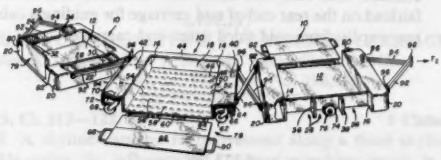
TRUE TRACKING TRAILER

Frederick R. Jennings, 7740 Obsidian Ct., Cupertino, Calif. 95014, and James O. Moritz, 15830 Rica Vista Dr., San Jose, Calif. 95127

Filed Oct. 31, 1977, Ser. No. 847,136

Int. Cl.[2] B60D *1/14*

U.S. Cl. 214—85 **10 Claims**



1. A true tracking trailer apparatus comprising:

first and second generally rectangular trailer vehicles each of which includes;

a rectangular, planar cargo bed having a front, rear, left and right side and a longitudinal centerline extending between said front and rear sides and a transverse centerline extending between said left and right sides,

a front inner wall rising perpendicularly from the plane of the bed at said front side and a rear inner wall rising perpendicularly from the plane of the bed at said rear side,

outer wall means having a front portion disposed forward of said front inner wall and having a rear portion disposed rearward of said rear inner wall whereby a front wheel well is defined between said front portion and said front inner wall and a rear wheel well is defined between said rear portion and said rear inner wall,

a front castor wheel supporting said vehicle and disposed in said front wheel well,

a rear castor wheel supporting said vehicle and disposed in said rear wheel well,

a fixed wheel supporting said vehicle and having an axis of rotation parallel to and aligned with said transverse centerline,

means connecting said second vehicle to said first vehicle including;

a first linkage arm pivotally connected at a first end of said second vehicle along a first side of said longitudinal centerline and pivotally connected at a second end to a second end of said first vehicle along a second side of said longitudinal centerline; and

a second linkage arm pivotally connected at a first end to a first end of said second vehicle along a second side of said longitudinal centerline and pivotally connected at a second end to a second end of said vehicle along a first side of said longitudinal centerline;

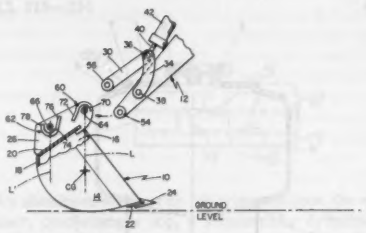
whereby said true tracking trailer apparatus may be towed in either direction and whereby said trailer apparatus maintains an essentially constant distance between load centers of said trailers.

4,127,203

TOOL CONNECTING SYSTEM

Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Inc., Hubbardston, Mass.

Filed Jul. 29, 1978, Ser. No. 820,170
Int. Cl.[2] E02F *3/81*
U.S. Cl. 214—145 A **16 Claims**



1. In a system for releasably connecting to a boom a materials handler of the type in which brackets secured to the materials handler define a pair of coaxial axially-spaced bores and in which the boom includes a connector having a pair of coaxial axially-spaced bosses, that improvement wherein:

a stop is mounted on the brackets adjacent each of the bores,

each of the stops defines a stop surface projecting from the bracket to which it is mounted in a direction generally parallel to the axis of the bores, facing generally towards the center of gravity of the materials handler, and subtending an arc in the range of 120° to 180° coaxial with the bore and on the side of the bore opposite the center of gravity,

each of the stop surfaces is arranged to engage a cylindrical surface of diameter equal to that of a cylindrical surface tangent to the exterior surface of and coaxial with a respective one of the bosses and position the surface so engaged in coaxial alignment with the bore associated therewith, and

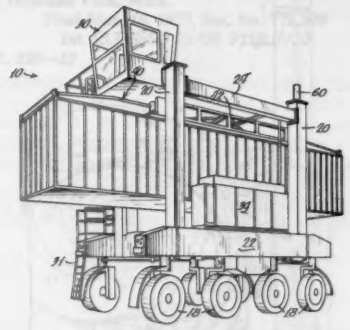
each of the stops is open on the side of the bore associated therewith opposite the stop surface thereof.

4,127,204

CENTERING MEANS FOR SPREADER SUPPORTED ON BEAMS

Lynn L. Keller, Sturgeon Bay, and Duane L. Thiele, Schofield, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 844,622
Int. Cl.[2] B60P *1/02*
U.S. Cl. 214—394 **6 Claims**



1. In a vehicle including a frame having a pair of spaced legs defining an elongated open container receiving bay with a transversely extending beam having opposite ends respectively guided for vertical movement in said bay; a spreader; guide means on said beam supporting said spreader on the beam for movement thereon; a fluid ram between said beam and said spreader; control valve means for supplying hydraulic fluid to said fluid rams to transversely shift said spreader in said bay on said beam; an electric circuit for actuating said control valve means and including a pair of switches on one of said spreader and beam, manual means for energizing said electric circuit and an actuator on the other of said spreader and beam, for actuating at least one of said pair of switches when the spreader is offset from a predetermined position with respect to said beam to move said spreader to said predetermined position.

4,127,205

LIFT TRUCK LOAD CLAMP FOR HANDLING PAPER ROLLS

Stanley E. Farmer, Troutdale; Harry F. Weinert, Portland, and Donald M. Faust, Gresham, all of Oreg., assignors to Cascade Corporation, Portland, Oreg.

Filed Sep. 19, 1977, Ser. No. 834,107
Int. Cl.[2] B66F *9/18*
U.S. Cl. 214—652 **11 Claims**

1. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical roll of paper and the like, comprising:

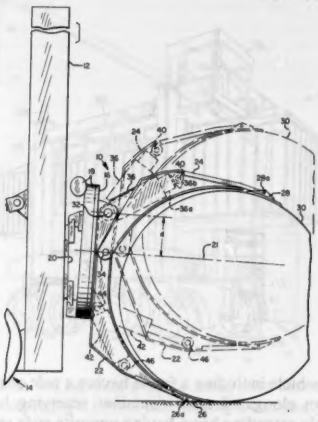
(a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;

(b) rotating means for rotating said frame with respect to said lifting apparatus about a generally forwardly extending axis of rotation;

(c) first and second selectively openable and closeable opposing clamp arms mounted upon said frame projecting therefrom in a forward direction, each of said pair of clamp arms having a forward end and a rear end respectively;

(d) first pivotal connection means connecting the rear end of the first clamp arm to said frame at a first position for permitting said first clamp arm to pivot with respect to said frame about a first pivot axis extending transverse to said forward direction at said first position;

(e) second pivotal connection means, located at a second position a spaced distance away from said first position on a mid-portion of said first clamp arm between the forward and rear ends thereof, connecting the rear end of the second clamp arm to said first clamp arm for permitting said second clamp arm to pivot with respect to said first clamp arm about a second pivot axis extending transverse to said forward direction at said second position;



(f) power means mounted upon said frame and connected to said respective clamp arms for selectively moving said clamp arms in unison about said first pivot axis and pivoting said clamp arms with respect to one another about said second pivot axis;

(g) said first pivot axis being offset transversely from said axis of rotation by a distance, and said second pivot axis being nearer to said axis of rotation than said first pivot axis.

4,127,206

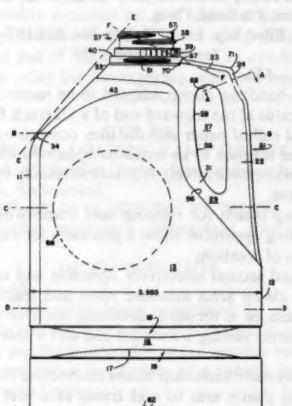
MILK BOTTLES

John J. Virog, Jr., Massapequa Park; Leo Von Hagel, North Massapequa, both of N.Y., and Richard L. Platte, Ann Arbor, Mich., assignors to Honeywell Farms, Inc., New York, N.Y.

Continuation of Ser. No. 731,294, Oct. 12, 1976 Pat. No. 4,046,275. This application Sep. 1, 1977, Ser. No. 829,966

Int. Cl.[2] B65D *23/00*

U.S. Cl. 215—1 C **15 Claims**



1. A blow-molded light-weight thin-walled plastic milk bottle having a volume of substantially three quarts and weighing less than 60 grams, having a substantially rectangular 4 inch by 6 inch cross-section having a 4 inch wide front wall, a 4 inch wide lower rear wall parallel to said front wall and two parallel 6 inch wide side walls at right angles to said front and lower rear walls, said front, lower rear and side walls being substantially vertical and substantially planar, said container having a central squat generally cylindrical upright spout, said spout having an upper mouth opening and having a screw thread therebelow, said mouth opening being adapted to be tightly closed by a correspondingly threaded plastic cap, said bottle having an integral continuously hollow handle centrally positioned, with respect to said lower rear wall, and an upper rear wall spaced horizontally from said handle, said handle having a substantially vertical main upright portion whose base is adjacent to said lower rear wall, said upright portion being spaced from said upper rear wall sufficiently to provide space for a plurality of fingers of a hand, side-by-side in vertical array, the top of said upright handle portion communicating with a gently sloping upper generally horizontal handle portion which communicates with the bottle just below said spout, said bottle having an inclined top wall which intersects said front wall and said side walls, the inclination of said top wall being such that the imaginary diametral line from the pouring edge of said spout to the point where said front wall meets said inclined top wall makes an angle of about 40° to the vertical.

4,127,207

STACKABLE PLASTIC BOTTLES

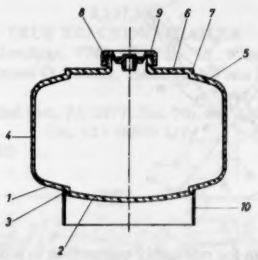
Guy Hubert, Lasne-Chapelle-Saint Lambert, and Charles Vandenhove, Vilvoorde, both of Belgium, assignors to Societe Bourguignonne d'Applications Plastiques, Chevigny-Saint-Sauveur, France

Filed Aug. 13, 1976, Ser. No. 714,272

Claims priority, application France, Aug. 18, 1975, 75 25714

Int. Cl.[2] B65D *23/00*

U.S. Cl. 215—1 C **24 Claims**



1. Stackable plastic bottles comprising a base wall, a side wall and a neck wall provided with an orifice, characterised in that the base wall and the neck wall each possess a central zone which, by virtue of a shoulder, projects relative to the peripheral zones of these walls, the location where each shoulder joins its respective peripheral zone defines a section, and said sections defined between said shoulders and said respective peripheral zones are substantially identical to one another.

4,127,208

CONTAINER AND HERMETICALLY SEALED TAMPERPROOF PROTECTOR

Thomas A. Fowles, McHenry, Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

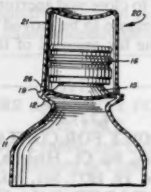
Filed Mar. 14, 1977, Ser. No. 777,753

Int. Cl.[2] B65D *41/32*

U.S. Cl. 215—253 **3 Claims**

1. A container having a neck portion and at least one open-

ing defined by said neck portion, and improvement comprising a cup-shaped protective closure covering said opening, said closure having a body portion and a thin frangible section between said closure and said neck portion, said closure and neck portion juncture comprising a depression with said frangible section located in a vertical wall of said depression to provide for fracture of said frangible section by tension, said frangible section including (a) an outer wall and (b) an interior slot comprising the spacing between said body portion and said neck portion, said protective closure forming a sterile hermetically sealed closure over the opening.

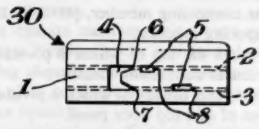


4,127,209

METAL TEAR-OFF CAP

Hermann Ritzenhoff, Marburg, Lahn, Fed. Rep. of Germany, assignor to Gebruder Seidel KG, Marburg, Fed. Rep. of Germany

Continuation of Ser. No. 313,460, Dec. 8, 1972, abandoned.
Filed Aug. 27, 1976, Ser. No. 718,109
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1971, 2161026
Int. Cl.[2] B65D *41/32*
U.S. Cl. 215—254 **6 Claims**



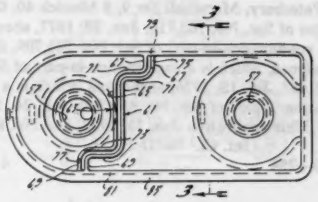
1. An aluminum sealing cap for crimping upon the neck of a container, comprising a top, a substantially cylindrical skirt integrally joined to said top, at least one tear line of reduced strength disposed about said skirt for defining a tear-off strip relative to the remainder of said cap, a major perforation through said cap in said tear-off strip and extending across its width for initiating its separation from said remainder of said cap, said major perforation being of limited circumferential length whereby said cap is in itself capable of sealing the neck of the container to retain substantial internal pressure within the container, at least one smaller perforation only in said tear-off strip and narrower than said tear-off strip, said smaller perforation intersecting said one tear line at a location which is near but angularly offset in one direction from said major perforation, a strong holding tab of separate material secured through said smaller perforation to said tear-off strip and extending through said major perforation and disposed on both sides of said tear-off strip for grasping and forceably initiating the separation and for separating said strip from said cap, said tab comprising a strong tear-resistant plastic tape having inner and outer tape portions which overlap inner and outer surfaces of said tear-off strip and which extend in overlap with said perforations and with that part of said tear-off strip which is between said perforations, said tab further including an externally accessible flexible end extending from said major perforation in the direction away from said one direction, and the inner and outer portions of said tape being joined to each other and to said tear-off strip by ultrasonic tape-to-tape welds through said perforations, whereby said tape is remarkably strongly attached to said tear-off strip.

4,127,210

MASTER CYLINDER RESERVOIR

Arthur G. Sabat, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 16, 1977, Ser. No. 778,309
Int. Cl.[2] B65D *25/04*; F15B *7/10*
U.S. Cl. 220—22 **4 Claims**



1. In a reservoir for the master cylinder of a vehicle hydraulic brake system, said reservoir having a lower fluid carrying portion, an upper cover portion secured to said lower fluid carrying portion and a set of spaced dividers extending substantially transversely from one side wall of said reservoir to the other side wall thereof forming two reservoir sections, said set of dividers comprising a first and second wall, said dividers having an opening in each wall offset from the opening in the other wall; each of said walls having an elongated transversely extending central portion, first and second intermediate portions extending perpendicularly with respect to opposite ends of said central portion, and first and second end portions extending transversely between said intermediate portions and each of said side walls to thereby provide a tortuous path for the fluid transfer between the two reservoir sections.

4,127,211

DRINKING CUP AND SUPPORT

John E. Zerbey, Tylersport, Pa., assignor to Product Research & Development Corporation, Tylersport, Pa.

Filed Sep. 6, 1977, Ser. No. 830,535
Int. Cl.[2] B65D *7/42, 55/16*
U.S. Cl. 220—212 **7 Claims**

1. Apparatus comprising a drinking cup having a handle, a plastic lid for the upper end of said cup, said lid having means connecting the same to said handle so that the lid may be manually removed from the upper end of the cup and disposed to one side of the cup while being retained by the handle, means for removably connecting said cup to a support, said means including a plurality of projections on the lower end of said cup, a base having means for fastening the same to a support, said base having means thereon for receiving the

lower end of said cup, said base containing L-shaped bayonet slots, each of said bayonet slots being adapted to receive one of said projections, each of said bayonet slots having a detent for retaining a projection therein for minimizing a tendency of the cup to rotate relative to the base due to vibration of a support on which the base is attached, said handle having a generally vertical portion with ends connected to said cup, said means for connecting the lid to the handle being a tab integral in one piece with said lid, said tab being bent back on itself to form a loop about said handle, said loop slidable along the handle which it surrounds.

4,127,212

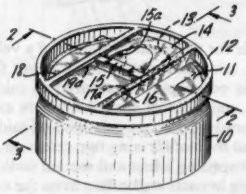
VENDABLE RECLOSABLE BEVERAGE CONTAINER

Nelson J. Waterbury, Marschall Str 9, 8 Munich 40, Germany

Continuation of Ser. No. 763,716, Jan. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 723,709, Sep. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 705,682, Jul. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 699,240, Jun. 24, 1976, abandoned. This application Jan. 13, 1978, Ser. No. 869,295

Int. Cl.² B65D *51/18*

U.S. Cl. 220—254 **41 Claims**



1. A container comprising means forming the upper end of a substantially rigid container, a lid recessed below the upper end of the container, at least one opening in the lid for the discharge of the contents of the container, a sliding cap for closing the opening, interfacing seals on the lid around the opening and on the cap to form an airtight seal, a guideway on the lid for slidably receiving and holding the cap on the lid, camming means engageable with the sliding cap to interlock the sliding cap with the opening, the cap when properly located along the guideway being held by said camming means with the interfacing seals in engagement to close the opening, and a finger engageable portion on the cap for moving it across the lid along the guideway for unsealing the opening.

4,127,213

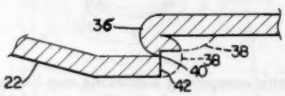
EASY-OPEN PUSH-TAB END FOR METAL CONTAINERS

Neal J. McConnellogue, Lakewood, Colo., assignor to Entech Corporation, Englewood, Colo.

Continuation of Ser. No. 623,758, Oct. 20, 1975, abandoned. This application Dec. 3, 1976, Ser. No. 747,100

Int. Cl.² B65D *41/32*

U.S. Cl. 220—268 **17 Claims**



1. An end closure for a container comprising:

a relatively flat panel having an outer peripheral connecting rim and a recessed portion forming an aperture in said panel for removal of contents from the container;

a reverse curved, underfolded edge portion at least partially surrounding the aperture, said underfolded edge extending in a plane along the underside of the panel, and

a push tab traversing the aperture in said panel and including an outer peripheral edge underlying said underfolded edge portion, there being a line of separation disposed intermediately between the outer peripheral edge of said push tab and said underfolded edge portion extending in a plane parallel to said push tab, and means retaining said push tab in continuous contact with said underfolded edte portion whereby to close said aperture and being yieldable under manual pressure to be moved away from the aperture to open same for removal of the contents from the container.

4,127,214

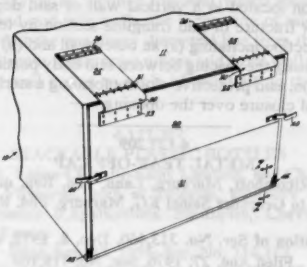
HINGE ASSEMBLY FOR CONTAINER DOORS

Rafael Pedraza, 840 SE. 8th Ct., Hialeah, Fla. 33010

Filed Dec. 19, 1977, Ser. No. 861,536

Int. Cl.² B65D *43/14, 51/04*

U.S. Cl. 220—334 **4 Claims**



4. A hinge for opening and securing the door to a container comprising:

a flat spacing member one end of which is pivotally secured to the top of a container,

a curvilinear connecting member, pivotally attached to the said flat spacing member,

a top door panel the top of which is pivotally attached to said curvilinear connecting member,

a bottom door panel the top of which is pivotally attached to the bottom of said top door panel,

a guiding member securedly attached to said container whereby said door can be guided to a tightly closed position,

means for locking one of said door panels to the container.

4,127,215

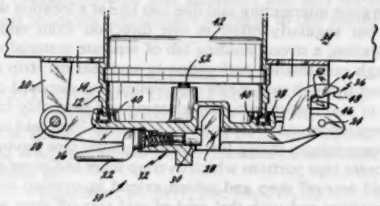
ACCESS PORT COVERING DEVICE

Donald L. Morrison, Anaheim, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Irvine, Calif.

Filed Feb. 6, 1978, Ser. No. 875,594

Int. Cl.² B65D *45/28*

U.S. Cl. 220—314 **12 Claims**



1. A combination for securing an access port cap in the

presence of a required component in the port, the combination comprising:

(a) a cap adapted to cover an access port;

(b) fastening means attached to said cap for securing said cap in a closed condition; and

(c) interlock means mounted in said cap including a first member adapted to engage the required component and a second member, cooperating with said first member, and adapted to block said fastening means, whereby the absence of the required component prevents the access port cap from being unintentionally secured.

4,127,216

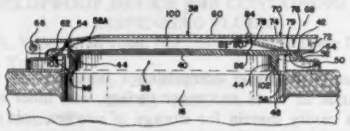
VENTING CLOSURE ASSEMBLY FOR MILK TANK OR THE LIKE

Timothy J. Martin, Jr., Lynden, and David C. Waschke, Everson, both of Wash., assignors to Light Industrial Design Co., Inc., Sumas, Wash.

Continuation-in-part of Ser. No. 774,874, Mar. 7, 1977, Pat. No. 4,081,107. This application Jan. 3, 1978, Ser. No. 866,288

Int. Cl.[2] B65D *51/16*

U.S. Cl. 220—374 **41 Claims**



1. A closure assembly for a containing structure, such as a milk tank, defining a containing chamber to contain a liquid, such as milk, said containing structure having an opening defined by a perimeter wall of a ring structure surrounding said opening, said closure assembly comprising:

a. a vented cover member fitting over said opening, said vented cover member having a main cover portion and a perimeter portion fitting over the ring structure of the containing structure,

b. a venting closure member fitting over said containing opening at a location below said vented cover member, said venting closure member comprising:

1. a main plate portion extending across said containing structure opening,

2. a first upper perimeter flange extending laterally over said ring structure to form a seal between the perimeter portion of the vented cover member and said ring structure,

3. at least one lower perimeter flange extending laterally to engage the perimeter wall of the ring structure and form with the upper flange and the perimeter wall a circumferential venting channel,

4. a barrier member extending across said venting channel, and

5. said venting closure member being provided with a first interior opening leading from the interior of said containing structure into said venting channel, and a second exterior opening leading from said venting channel to an area between said vented covered member and said venting closure member, with said interior and exterior openings being spaced circumferentially with respect to one another, and being positioned on opposite sides of said barrier member at a circumferential distance from one another less than 180°,

whereby the opening of the containing structure can be closed in a manner to contain said liquid securely without undue risk of contamination from an outside source, and there is also provided a venting passage from the lower opening of the closure member through said venting channel to said exterior opening of the venting closure member.

4,127,217

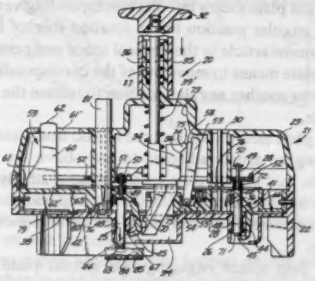
SENSITIVITY DISC DISPENSER WITH TAMPER MECHANISM

Philip F. Hurst, Columbia, and Jasper Derry, Lothian, both of Md., assignors to Becton, Dickinson & Company, East Rutherford, N.J.

Filed Jun. 7, 1977, Ser. No. 804,233

Int. Cl.[2] B65H *3/44*

U.S. Cl. 221—94 **22 Claims**



1. A sensitivity disc dispenser comprising; a dispensing structure for having a plurality of disc containing cartridges and having means for simultaneously dispensing a disc from each cartridge through each one of a selected number of discharge ports containing a cartridge in a predetermined pattern, including means for positioning a disc from each cartridge into alignment with the discharge port, tamping means for expelling the disc through the respective discharge ports into a receiving dish, means for permitting dispensing through a selected number of ports less than the total number of ports, and control means for moving each disc into and retaining it in a predetermined position and orientation with respect to a selected discharge port and assuring the directing of each disc in the proper orientation by the tamping means onto a receiving surface.

4,127,218

ARTICLE STORAGE UNIT DEVICES FOR USE IN VENDING MACHINES

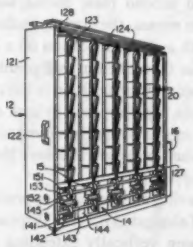
Ryohei Kondo, Isesaki, Japan, assignor to Sankyo Electric Company Limited, Isesaki, Japan

Filed Aug. 19, 1976, Ser. No. 715,825

Claims priority, application Japan, Nov. 6, 1975, 50-152062[U]; Feb. 17, 1976, 51-15432; Mar. 22, 1976, 51-32874[U]

Int. Cl.[2] B65G *59/10*

U.S. Cl. 221—124 **5 Claims**



4. An article storage unit device with means for discharging one article at a time for use in a vending machine, comprising:

a housing having a front plate, a side plate and a rear plate, and having a bottom opening, an interior of said housing being partitioned by partition walls into a plurality of

vertically extending spaces which are arranged along a horizontal direction from the front plate to the rear plate,

first plate means is disposed along each of said vertically extending spaces at a position adjacent to said bottom opening on an opposite side of said side plate, said first plate means being rotatably supported at an upper end thereof, with a lower end thereof being freely movable into and out of the corresponding vertical spaces,

first cam means engaging said first plate means for pushing said first plate means into the corresponding vertical space at an angular position to the rotation thereof to hold the lowermost article in the vertical space and permitting said first plate means to move out of the corresponding vertical space to another angular position to release the lowermost article,

second plate means disposed above said first plate means for holding an article adjacent to and above the lowermost article, said second plate means being rotatably supported at an upper end thereof, with a lower end thereof being freely movable into and out of the corresponding vertical space,

second cam means engaging said second plate means for pushing said second plate means into the corresponding vertical space at an angular position to the rotation thereof to hold the article adjacent to and above the lowermost article and permitting said second plate means to move out of the corresponding vertical space to another angular position to release the article adjacent to and above the lowermost article, said second cam means being disposed in a different angular position than said first cam means so that said second cam means is in a pushing angular position when said first cam means is in said another angular position,

and an upper support member for supporting the upper ends of said bars and being mounted on said open side of said housing horizontally extending between said front plate and said rear plate, said upper support member being provided with means for retaining the upper ends of said bars and being releasable to permit the upper ends of said bars to deflect so that articles are able to be inserted into said vertical spaces without disassembling said bars, and said upper support member being formed with a plurality of horizontally extending slots into which the upper ends of said plurality of bars are inserted whereby the deflection of said bars is guided and limited within a predetermined distance,

cam follower projecting means are provided with at least one of said first and second plate means, said cam follower projecting means engages a surface on said at least one of said first and second plate means that faces the corresponding cam means, the corresponding cam means being provided with a stepped portion on a transition region of a cam contour thereof from said pushing angular position to said another angular position in the rotating direction of the cam means, whereby said at least one of said first and second plate means is rapidly moved to develop a mechanical shock when said cam follower projecting means follows said stepped portion,

said housing having an open side opposite to said side plate, a plurality of elongated bars are disposed on said open side of said housing vertically extending along said vertical spaces, respectively, a lower support member for supporting the lower ends of said elongated bars is disposed on said open side of said housing to horizontally extend between said front plate and said rear plate, said vertically extending spaces being for storing and stacking articles therein.

4,127,219

NEEDLE DISPENSER

Richard C. Mabus, 46 Mary Dr., Towaco, N.J. 07082

Filed Dec. 27, 1976, Ser. No. 754,590
Int. Cl.² A47F *1/04*
U.S. Cl. 221—303 **9 Claims**

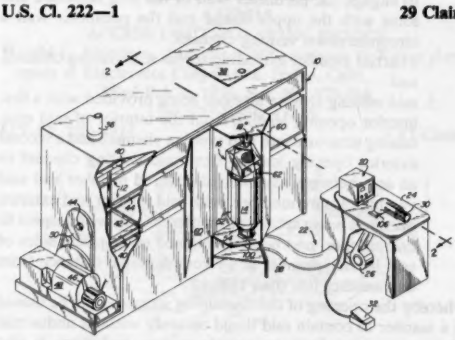
1. A needle dispenser comprising a tubular body whose walls contain an inner and outer surface, said inner surface defining a cavity therein for storage of needles, said cavity containing a plurality of spherical pellets, said body terminating in a first end which is sealed at its extremity and terminating at a second end containing a centrally-located aperture in communication with said cavity, said aperture having a diameter in excess of the maximum diameter of the greatest-diameter needles to be stored in said cavity, said outer surface terminating at said second end in a substantially convex surface and said inner surface terminating at said second end in a substantially concave surface, such that when the dispenser is oriented in a dispensing position, at least some of said pellets will be in frictional contact with said substantially concave surface and with said needles, such that only one needle at a time is capable of being dispensed from said dispenser through said aperture.

4,127,220

METHOD AND APPARATUS FOR MEASURING FLUFFED DOWN BY WEIGHT

Martin S. Werthaiser, 4426 S. Fraser Ct., Denver, Colo. 80232, and Paul L. Legoski, 1261 Syracuse, Denver, Colo. 80220

Filed Jul. 28, 1977, Ser. No. 819,886
Int. Cl.² G01G *13/02*
U.S. Cl. 222—1 **29 Claims**



23. A method of measuring down by weight for use, comprising the steps of:

continuously fluffing a supply of down within a main container,

withdrawing an amount of fluffed down from the main container,

selectively conducting an amount of the withdrawn down into a weighing container,

sensing the weight of the down in the weighing container,

controlling the amount of fluffed down withdrawn from the main container in relation to the weight sensed, and

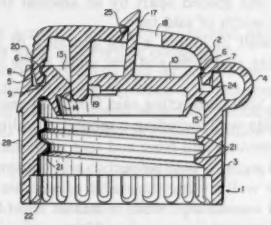
controlling the amount of down conducted into the weighing container in relation to the weight sensed and independently of the amount of down withdrawn from the main container.

4,127,221

CHILDPROOF DEVICE FOR CONTAINING AND DISPENSING FLUIDS

Mary A. Vere, Ridgewood, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 889,139
Int. Cl.[2] B65D *25/42*
U.S. Cl. 222—153 **17 Claims**



1. A childproof device for containing and dispensing a substance, said device comprising:

a container means for containing said substance therein, said container means being comprised of a body portion and a neck portion extending outward from said body portion; and

childproof capping means fitted onto said neck portion of said container means for dispensing said substance from said container and for preventing children from having easy access to said substance in said container means, said capping means being comprised of:

a base portion fitted onto said neck portion, said base portion having an orifice opening through the top wall thereof through which the contents of said container means are dispensed and a groove around said top surface;

a top portion over said base portion and removably fitted into said groove, said top portion having an opening therethrough;

a flexible upright locking lever extending upward from said top wall of said base portion through said opening in said top portion and resiliently engaging said top portion when said top portion is fitted over said base portion; and

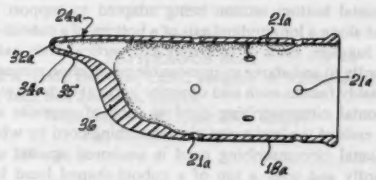
closing means extending downward from said top portion for closing said orifice opening when said top portion is fitted over said base portion.

4,127,222

SEWING THIMBLE

Roberta V. Adams, 17810 Superior St., Northridge, Calif. 91325

Continuation-in-part of Ser. No. 745,466, Nov. 26, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,169
Int. Cl.[2] D05B *91/04*
U.S. Cl. 223—101 **1 Claim**



1. A sewing thimble comprising:

an elongated body member defining an inner bore having a contour of a finger, wherein said body is formed from a pliable stretch material;

a needle-engaging head member formed on one end of said body wherein said head member is formed of a hard material having a thickness at least twice that of said body member, and including a forward engaging surface that extends downwardly and rearwardly to cover the tip of the finger, said surface of said head member being roughened to provide a non-slip surface to allow the end of the needle to engage therewith, wherein said head member further includes a protective plate laminated and interdisposed therein adjacent the forward engaging surface thereof;

an extended tip member of thin, flexible stretch material defining a fingernail-receiving section that is stretchable to accommodate various lengths of fingernails;

a plurality of vent holes disposed in said body member rearwardly of said head member;

said body member having an open end to receive said finger therein; and

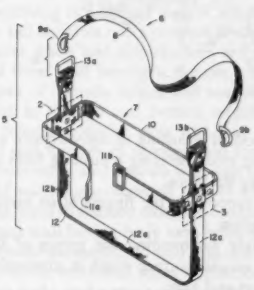
an annular rib formed about said open end to prevent collapsing thereof.

4,127,223

STRAP CARRYING DEVICE

Stanley P. Uchin, 21 Alexander Rd., E. Brunswick, N.J. 08816

Filed Oct. 25, 1977, Ser. No. 844,743
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—55 **4 Claims**



1. A luggage-harness device comprising in combination: an elongated shoulder strap means for carrying a luggage harness; two latching means each for securing spaced-apart positions of a baggage harness to opposite ends of the shoulder strap means; and a harness means for enveloping sides and a bottom of a

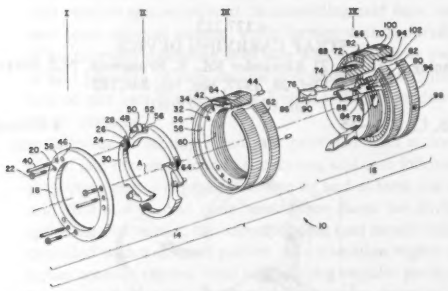
cuboid-shaped hand luggage, consisting of a horizontal circumscribing cord and a detachable fastening means for intermittently fastening together opposite ends of the horizontal circumscribing cord, the harness means further consisting of a bottom cord including opposite vertical ends adapted to support opposite ends of a cuboid-shaped hand luggage and a horizontal bottom section in series with and intermediate between and continuous with said opposite vertical ends, the horizontal bottom section being adapted to support and to extend along a longitudinal axis of a bottom of a cuboid-shaped hand luggage, each of said opposite vertical ends extending upwardly to and above an immovable connection means which adjustably fastens each said opposite vertical ends between the horizontal circumscribing cord at each of opposite spaced-apart ends of the horizontal circumscribing cord by which the horizontal circumscribing cord is anchored against slipping upwardly and over a top of a cuboid-shaped hand luggage when carried within the horizontal circumscribing cord but which the horizontal circumscribing cord may selectively be adjusted horizontally or vertically by the connection means, with a center of gravity of the harness means substantially equally-spaced between said opposite spaced-apart ends and with each said immovable connection means being at an elevation point with a center of gravity below the horizontal-circumscribing cord for and when a cuboid-shaped hand luggage is mounted therein whereby accidental tipping thereof is deterred and whereby steady-carriage thereof is maintained during the transporting of a cuboid-shaped hand luggage within the harness means when the elongated shoulder strap means is supported on a person's shoulder.

4,127,224

ADJUSTABLE STOCK BUSHING

William E. Newman, Sr., Baltimore, Md., assignor to Paul Donald Newman, Baltimore, Md.

Filed Apr. 29, 1977, Ser. No. 792,310
Int. Cl.[2] B65H *23/32*
U.S. Cl. 226—3 **26 Claims**



2. The method of adjusting in convergence a group of fingers for guiding stock entering a bushing from an axial direction, comprising the steps:

a. pivotally supporting the fingers at an inclination to said axial direction;

b. contactingly surrounding the group of fingers with a group of arcuate-surface cams in circumferential disposition about said axis;

c. Pivoting each said cam for movement in a plane perpendicular to said axis;

d. adjusting the pivotal position of each said cam, and

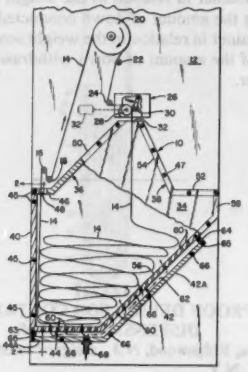
e. screwing said group of cams along said axis relative to said group of fingers, thereby adjusting in convergence the group of fingers.

4,127,225

TAPE STORAGE BIN

James L. King, Sudbury, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Continuation of Ser. No. 621,508, Oct. 10, 1975, abandoned.
This application Feb. 23, 1977, Ser. No. 771,206
Int. Cl.[2] B65H *17/50*
U.S. Cl. 226—118 **6 Claims**



1. In combination with tape handling apparatus, a bin for accumulating and temporarily storing tape while the tape is being moved at relatively high speeds, said bin comprising:

front and rear walls disposed substantially parallel to one another and spaced apart by an amount slightly greater than the width of said tape;

a bottom wall including a first plurality of apertures and connecting said front and rear walls at the bottom of said bin;

a first side wall connecting said front and rear walls;

a second side wall including a second plurality of apertures and connecting said front and rear walls and being longer than and inclined with respect to said bottom wall and said first side wall so that the width of said bin between said first and second side walls increases from the bottom of said bin toward the top of said bin;

first and second top wall sections connecting said front and rear walls and forming with said front and rear walls a tape inlet disposed above said second side wall, said first top wall section including a tape outlet aperture disposed above said bottom wall;

first guide means for guiding said tape through said tape inlet into said bin;

second means for guiding said tape through said tape outlet out of said bin; and

means including a manifold attached to said bottom and second side walls for introducing a pressurized fluid through said first and second pluralities of apertures into said bin so as to establish a pressure gradient in said bin in order to pneumatically support the tape accumulating in said bin above said bottom wall and said second side wall;

wherein the interior of said bin is constructed free of obstructions so that said tape guided through said tape inlet into said bin can free fall into engagement with said second side wall.

4,127,226

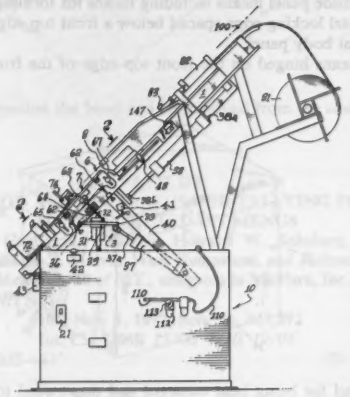
COMBINED KERFING AND JOINT NAILING MACHINE

Lane Jasper, 165 N. Catalina Ave., Pasadena, Calif. 91101

Filed Oct. 17, 1977, Ser. No. 842,944
Int. Cl.[2] B27M *1/08*
U.S. Cl. 227—69 **12 Claims**

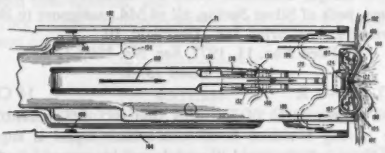
1. A combined kerfing and joint nailing machine comprising:

an elongated frame element encompassing a nailing axis and supporting generally therealong:
workpiece tables with holding fixtures thereon to hold workpieces;
kerfing saw positioning means carrying a kerfing saw; and
a nailing head; and further comprising:
fixture actuator means to move said fixtures between a separated position and a joined position;
saw actuator means to move said saw on said positioning means between an erect position adjacent said axis and a retracted position clear of said axis, and to feed said saw into said workpieces in said erect position to cut kerfs therein;



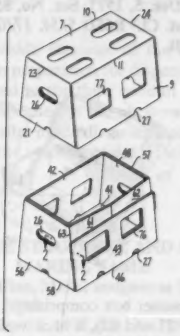
nailing head actuator means to cause said nailing head to drive joint nails; and further comprising:
control means connected to said actuator means and adapted to effect the following sequence of operations:
(a) move said fixtures to said separated position;
(b) move said saw from said retracted position to said erect position;
(c) feed said saw into said workpieces to cut a kerf therein;
(d) withdraw said saw from said kerf;
(e) move said saw to said retracted position;
(f) move said fixtures to said joined position to hold said workpieces in contact; and
(g) drive a joint nail into said kerf.

4,127,227
WIDE FASCIA STAPLE CARTRIDGE
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Stamford, Conn.
Filed Oct. 8, 1976, Ser. No. 730,822
Int. Cl.[2] B25C *5/02, 5/16*
U.S. Cl. 227—83 **20 Claims**



1. A staple-carrying cartridge comprising: an elongate main body for associating with a stapling instrument having a forward end for the formation of staples in living tissue; a belt mounted for movement longitudinally relative to said main body and adapted to carry a plurality of surgical staples; a pusher mounted in said main body for longitudinal movement relative to said main body, said pusher having at least one downwardly projecting driving surface integral with said pusher adapted to extend into the plane of said staples; ramp means for singly moving said staples out of said belt and into the plane of said pusher, said at least one driving surface being adapted to move the forwardmost staple in said cartridge up said ramp means and into the plane of said pusher; spring pawl means associated with said pusher for advancing said belt and said staples in said cartridge; and anvil means associated with the forward end of said main body.

4,127,228
ASPARAGUS BOX
Richard A. Hall, Danville, Calif., assignor to Willamette Industries, Inc., San Leandro, Calif.
Filed Aug. 4, 1977, Ser. No. 821,647
Int. Cl.[2] B65D *5/00, 5/22*
U.S. Cl. 229—16 R **1 Claim**



1. A combined shipping and display container of trapezoidal shape for fresh products such as asparagus, the combination comprising a box body having a bottom, a rear wall hinged on said bottom and double thickness side walls, one thickness of said side walls including ends each having the rear edge thereof integral and hingably connected with a respective side of said rear wall, said side wall one thicknesses each having a cutout defined in the edge thereof which is remote from said one edge thereof, the other thickness of each of said side walls including an element having the bottom edge thereof integral with an end of said bottom, side closures hinged on each side wall and movable to provide a front wall parallel to said rear wall, said side closures being foldably attached at one edge thereof by a foldline to said side wall other thickness to open outwardly of the container for providing unobstructed passage of products into the container, said side closures further including viewing apertures defined therein, said foldlines each having a tongue-receiving slot defined therein, a front wall hinged on said bottom and movable into a position in which it overlays said side closures when said side closures are parallel to the rear wall, said front wall having a closure tongue hingedly attached to a pair of opposite edges, said tongues each having notches defined in the top and bottom edges thereof, said tongues, said tongue-receiving slots and said cutouts being located so that said tongues fit through said tongue-receiving slots and are received in said cutouts with said notches engaging the edges of said tongue receiving slots to attach said front wall to said side walls to thereby close the container, said front wall and said rear wall having body vent holes defined therein at the edges thereof connected to said bottom, the rear wall, the side walls and the front wall when so positioned providing an open top box body, and a separate movable cover having a cover top, a cover front wall and a cover rear wall and a pair of triple thickness cover end walls, said cover front and rear walls each having a first member hinged on the cover top and a pair of end elements each hinged on opposite edges of said first members, said last mentioned cover front wall and said cover rear wall each being attached at one edge thereof to

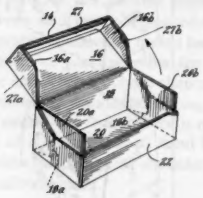
opposite edges of said cover top, a pair of end members each attached at one edge thereof to an edge of said cover top, each of the end elements on said cover front being in overlapping relationship with corresponding ones of the end elements on said cover rear wall and with one of said end members to define said triple thickness end walls, said cover front and rear walls having cover vent holes defined therein in the edges thereof which are remote from said one edges, said separable movable cover when assembled fitting snugly about the box body with said body and cover vent holes aligned to provide a ventilatable closure for the open top of the box body.

4,127,229

FLIP TOP DISPENSER BOX

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 5, 1977, Ser. No. 857,098
Int. Cl.[2] B65D *5/54, 17/00*
U.S. Cl. 229—44 CB **4 Claims**



1. A flip top dispenser box comprising:

a front wall (**14**, **27** and **22**), a back wall (**18**), top (**16**) and bottom (**20**) walls, and opposing side walls;

said front wall including a lower member (**22**) hingedly connected at one end thereof to said bottom wall; a detachable member (**27**) hingedly and releasably connected to said lower member (**22**); and a top member (**14**) overlapping and being adhered to said detachable member (**27**) and a portion of said lower member (**22**), one end of said top member (**14**) having a gripping edge, the other end of said top member (**14**) being hingedly connected to said top wall (**16**);

each of said side walls including an inner wall member (**20***a* and **20***b*) and hingedly connected to the bottom wall (**20**), each of said inner side wall members (**20***a* and **20***b*) having approximately the same height as said back wall (**18**), each of said side walls further including an outer wall member (**22***a* and **27***a*), (**22***b* and **27***b*), each of said outer wall members including a lower portion (**22***a* and **22***b*) hingedly connected to the lower member of said front wall (**22**) and overlapping and being adhered to a portion of its respective inner side wall member (**20***a* and **20***b*), each of said outer side walls further including a top portion (**27***a* and **27***b*) which is contiguous with, and releasably connected to its respective lower outer side wall portion (**22***a* and **22***b*), each top outer side wall portion being hingedly connected to the detachable member (**27**) of said front wall.

4,127,230

BULK CONTAINER WITH HINGED LOCKING TOP

Robert A. Bamburg, West Monroe; Roger M. Floyd, Monroe, and Farris N. Duncan, West Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Jul. 18, 1977, Ser. No. 816,535
Int. Cl.[2] B65D *5/68*
U.S. Cl. 229—45 R **6 Claims**

1. A bulk material container comprising

an integral body including four side body panels with means serially connecting the body panels for forming an enclosed wall;

bottom means for closing the bottom of the enclosed wall;

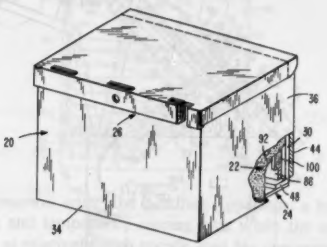
a top hinged on a top edge of a rear body panel of the four body panels;

said top including a top panel for covering the top of the enclosed wall, two narrow top side panels for extending downward over top portions of respective opposite side body panels of the four body panels, and front panel means for extending downward over a top portion of a front body panel of the four body panels;

said front panel means including outside panel means and inside panel means for being folded inside the outside panel means;

said inside panel means including means for forming a horizontal locking edge spaced below a front top edge of the front body panel;

tab means hinged on the front top edge of the front body



panel for being bent outward and downward to permit closing of the top but being resilient so as to be biased outward to engage the locking edge;

said outside panel means and said inside panel means having an opening therethrough in alignment with the tab means for permitting forcing of the tab means toward the front body panel to disengage the tab means from the locking edge;

short top flaps hinged on the top edges of the rear and opposite side panels of the four body panels at the top end of the body;

said top panel overlapping and being secured to the short top flap hinged on the rear body panel;

said tab means including a tab hinged on a central portion of the top edge of the front body panel; and

two flaps hinged on the top edge of the front body panel on respective opposite sides of the tab.

4,127,231

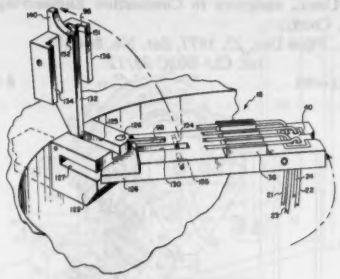
SUPPORT ARM FOR CENTRIFUGAL LIQUID PROCESSING APPARATUS

Mirza A. Khoja, Columbia; Louis F. Gutierrez, and John T. Perone, both of Silver Spring, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 11, 1977, Ser. No. 850,622
Int. Cl.[2] B04B *13/00*
U.S. Cl. 233—1 R **14 Claims**

1. In an apparatus of the type that includes a centrifuge device having a closed bowl into which liquid is supplied and/or from which liquid is withdrawn by means of at least one flexible tubing and a support arm assembly which is mounted on the apparatus, which extends over the bowl of the centrifuge device, and which has passage means at the free end thereof located centrally of and above the bowl for receiving therethrough the at least one flexible tubing, the improvement residing in said support arm assembly being a pivotal arm assembly which has a base portion fixed to the apparatus and an arm portion pivotally connected to said base portion and

pivotal from a first position over the bowl of the centrifuge device to a second position away from the bowl in which



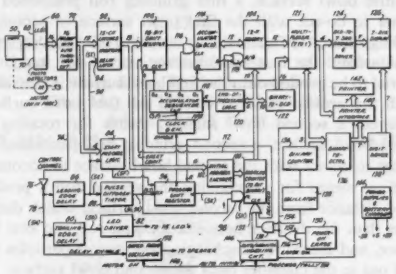
second position the bowl can be removed from the centrifuge device.

4,127,232

METHOD AND APPARATUS FOR TALLYING FOOD ITEMS SELECTED ON MENUS

Michael Gagliardo, Flushing; Howard W. Schubert, Sands Point; Rahm P. Malvin, West Hempstead, and Jackson Lum, Fresh Meadows, all of N.Y., assignors to Medfare, Inc., Westbury, N.Y.

Filed Nov. 1, 1977, Ser. No. 847,592
Int. Cl.[2] G06K *15/00, 7/10, 19/06*
U.S. Cl. 235—419 **29 Claims**



1. A system for processing menus and tallying food items selected from the menus, comprising:

detection means capable of detecting markings on a menu;

initializing circuit means responsive to the detection by said detection means of preassigned markings on the menu, for registering information identifying the menu;

recording circuit means enabled by said initializing circuit means to respond to the detection by said detection means of additional markings on the menu representing the food items selected, and for recording a count for each said food item selected, and

tallying means for displaying the total count for each food item of each identified menu.

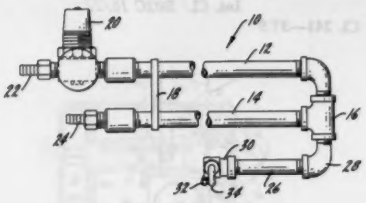
4,127,233

APPARATUS AND METHOD FOR DISPERSING A LIQUID TREATING AGENT

Joseph A. Maciaszek, Broadview, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed May 25, 1977, Ser. No. 800,153
Int. Cl.[2] B05B *7/00*
U.S. Cl. 239—8 **12 Claims**

1. Apparatus for introducing a liquid treating agent into a stream of air, attenuating the liquid and then finally dispersing the liquid as droplets unsuspended in the air stream and therefore capable of falling directly on the substrate to be treated, said apparatus comprising a first conduit for a stream of air under pressure, a second conduit for delivering the liquid toward the air stream, said conduits meeting at a juncture where the liquid is introduced to and entrained in the air stream, a third conduit extending downstream from said juncture a distance sufficient to enable the entrained liquid to be



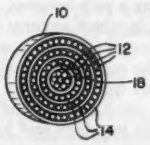
sheeted about the inside diameter of the third conduit and thereby attenuated in preparation for dispersion, and a dispersing conduit connected to the third conduit for dispersing the liquid droplets unsuspended in the air stream, said dispersing conduit having a smaller inside diameter than the third conduit thereby to increase the velocity of the air stream for impelling the droplets forward.

4,127,234

MULTI ORIFICE STRUCTURE AND METHOD OF MAKING SAME

Garland E. Busch, Milan, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 16, 1977, Ser. No. 796,953
Int. Cl.[2] B05B *1/14*
U.S. Cl. 239—558 **8 Claims**



1. A multiorifice fluid atomizer comprising a thin wafer having a plurality of alternating circular rows of parallel rods and cylindrically shaped members concentrically disposed about an axis of symmetry, each of said rods being fused to each adjacent rod and to each cylindrically shaped member tangent thereto to form an integral structure, wherein the interstices between the rods and the cyndrically shaped members form a plurality of orifices passing through said wafer.

4,127,235

PROCESS FOR PRODUCING PULVEROUS SELENIUM FROM RAW SELENIUM

Börje E. W. Klaile, Espoo; Jussi J. Käyhkö, Pori, and Eino A. Rosenberg, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Dec. 7, 1977, Ser. No. 858,268
Claims priority, application Finland, Dec. 20, 1977, 763654
Int. Cl.[2] B02C *19/00*
U.S. Cl. 241—1 **6 Claims**

1. A process for producing pulverous selenium from raw selenium, comprising:

spray drying the raw selenium;

distilling the dried raw selenium;

granulating the molten distillate by dripping it into water;

grinding an aqueous slurry of the selenium granules;

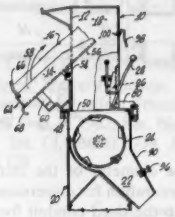
and finally spray drying the ground selenium slurry to produce pulverous selenium.

4,127,236

MEAT FLAKING MACHINE

William Lasar, 7322 Rio Hondo, Downey, Calif. 90241

Filed Sep. 12, 1977, Ser. No. 832,633
Int. Cl.[2] B02C *18/22*
U.S. Cl. 241—37.5 3 Claims



1. A meat flaking machine for reducing a block of meat to meat flakes comprising,

a lower housing having a vertically extending passageway therethrough,

a power driven cutting drum rotatably mounted in said lower housing extending across said passageway for cutting the block of meat into flakes,

an upper housing mounted on said lower housing having a vertically extending charging chamber communicating with said passageway, said upper housing further including a

vertical entrance opening communicating with said charging chamber,

a loading tray movably connected with said upper housing for movement along a path between,

a loading position in which an inner end of said loading tray extends through said entrance into said charging chamber with the remainder of said loading tray projecting outwardly from said upper housing to receive and support the block of meat, and

a charging position in which said loading tray extends along said entrance opening to position the block of meat within the charging chamber whereby, the block of meat enters the passageway and contacts said cutting drum;

a pressure plate movably connected to said upper housing positioned within said charging chamber for motion between,

an inoperative position extending along the charging chamber spaced oppositely from the entrance opening, and

an operative position extending across the lower end of the charging chamber adapted to contact the upper end of the block of meat as it moves through the lower end of said charging chamber;

a handle connected to said pressure plate positioned externally of said upper housing, said handle adapted to be grasped manually for movement along a path between a nonuse position locating said pressure plate in its inoperative position and a use position locating said pressure plate in the operative position whereby manual force applied to the handle presses the block of meat against the cutting drum; and

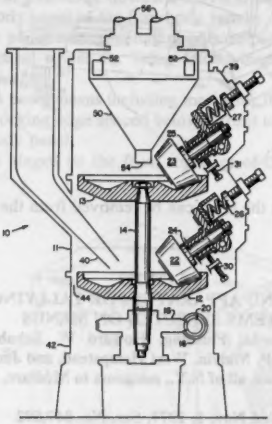
mechanical interlock means connected to said upper housing responsive to the position of said handle for preventing movement of said loading tray between the loading and the charging position when said pressure plate is out of its inoperative position.

4,127,237

PLURAL BOWL MILLS IN SERIES

Arun K. Mehta, Bloomfield, and Donald A. Smith, Haddam, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 27, 1977, Ser. No. 864,183
Int. Cl.[2] B02C *23/12*
U.S. Cl. 241—58 4 Claims



1. In a grinding mill, a first bowl surface, means for rotating said first bowl surface, a first grinding roll positioned in a manner to co-act with the first bowl surface to accomplish grinding, means for maintaining the first roll a predetermined distance from the first bowl surface, means for introducing material to be ground onto the first bowl surface, a classifier to which the ground material leaving the first bowl surface is conveyed, a second bowl surface, means for rotating said second bowl surface, a second grinding roll positioned in a manner to co-act with the second bowl surface to accomplish grinding, means for maintaining the second roll a predetermined distance from the second bowl surface, which distance is less than the distance between the first roll and first bowl surface, and means for discharging the coarse particles separated out in the classifier onto the second bowl surface.

4,127,238

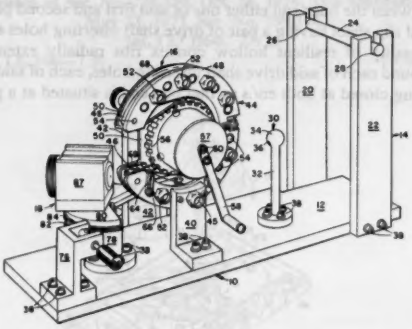
TOROIDAL CORE WINDER

Clifford M. Potthoff, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 6, 1977, Ser. No. 804,127
Int. Cl.[2] B65H *81/02*
U.S. Cl. 242—4 A 5 Claims

1. An apparatus for placing wire windings on a toroidal body having an orifice comprising: means for storing a supply of wire; means for supporting said body; an endless flexible belt forming a C-shaped loop with two spaced apart end portions and an inner and outer periphery and being adapted to receive wire loops encircling its outer periphery and bridging the space between said spaced apart end portions and located intermediate said storing and supporting means with said end portions disposed adjacent said supporting means and for positioning and moving said loops of wire through the orifice of said toroidal body; means for supporting and rotating said belt to wind said wire longitudinally along said outer peripheral

portion; and means including a slip plate pressed against a side of said belt supporting said rotating means for slipping loops of



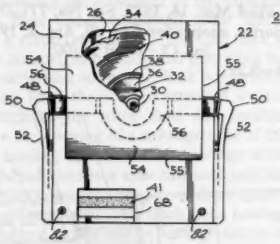
said wire between said slip plate and said side from the outer peripheral portion of said belt onto said body.

4,127,239

ENDLESS SOUND REPRODUCING TAPE CARTRIDGE

Arthur Dyck, Coquitlam, Canada, assignor to International Audio Visual Hong Kong, Kowloon, Hong Kong

Filed May 11, 1977, Ser. No. 796,007
Int. Cl.² B65H *17/48*
U.S. Cl. 242—55.19 A **14 Claims**



1. An improved endless sound reproducing tape cartridge, said cartridge comprising, in combination:

a. a hollow casing comprising

i. a top cover, and

ii. a base member releasably secured thereto;

b. a tape holder rotatably received in said casing;

c. an endless roll of sound reproducing tape disposed on said holder; and,

d. improved brake means, including

i. a resiliently movable portion of said top cover,

ii. a brake bar carried by said movable cover portion and normally positioned against at least one of said holder and said roll to prevent rotation thereof, and

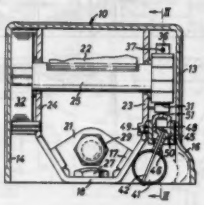
iii. biasing means secured to the outside of said casing for automatically biasing said movable cover portion and brake bar up out of contact with said holder and roll when said cartridge is placed in a sound reproducing mechanism.

4,127,240

ACCELERATION-SENSING MECHANISM

John Kell, Sherman Oaks, Calif., assignor to Kangol Magnet Limited, London, England

Filed Nov. 8, 1976, Ser. No. 739,992
Int. Cl.² B65H *75/48;* A62B *35/02*
U.S. Cl. 242—107.4 A **3 Claims**



1. A vehicle safety belt retractor, said retractor comprising

(1) (a) a reel,

(b) a vehicle safety belt having an end thereof secured to said reel, and

(c) a rewind spring adapted to rotate said reel so as to wind said safety belt thereon,

(2) a locking mechanism operable to prevent rotation of said reel in a direction to unwind said belt therefrom, said locking mechanism comprising

(a) a ratchet wheel, and

(b) a pawl pivotably mounted for movement from a rest position wherein said pawl is disengaged from said ratchet wheel, to a locking position wherein said pawl engages said ratchet wheel to thereby operate said locking mechanism to prevent rotation of said reel in said unwinding direction, and

(3) an inertia sensing device operatively associated with said locking mechanism, said inertia sensing device comprising

(a) a tubular guide means having a cylindrical inner wall

(b) means mounting said tubular guide means in said retractor with the guide means axis substantially vertical

(c) lip means extending inwardly at the lower end of said tubular guide means, said lip means comprising a radially inwardly extending convex lip that joins the lower end of said cylindrical wall to form a circular corner

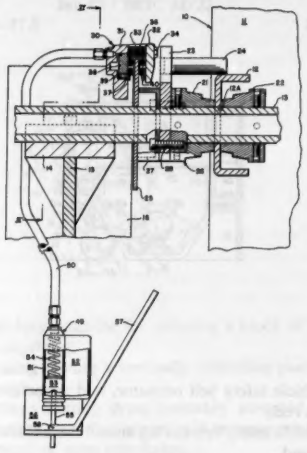
(d) pendulum means comprising a disc means and a pendulum weight fixedly suspended from said disc means, said disc means resting on said lip means in said circular corner in substantially line contact only, said disc means tapering inwardly from a lower peripheral edge to an upper surface with said lower peripheral edge being in centering relationship with said tubular guide means inner cylindrical wall,

(e) an output member resting on said disc means upper surface, said output member having a cylindrical outer surface in sliding relationship with said tubular guide means inner surface and an upper surface juxtaposed to said locking mechanism pawl, whereby an acceleration exceeding a predetermined amount causes said pendulum means to tilt about the disc means lower peripheral edge, said disc means upper surface causes upward movement of said output member, and said output member upper surface causes said locking mechanism pawl to pivot from the rest position to the locking position thereof.

4,127,241
CABLE REEL BRAKE APPARATUS

Armand R. Conti, 3464 N. Wendover Cir., Youngstown, Ohio 44511

Filed Sep. 6, 1977, Ser. No. 830,516
Int. Cl.[2] B65H 59/04
U.S. Cl. 242—156.2 11 Claims



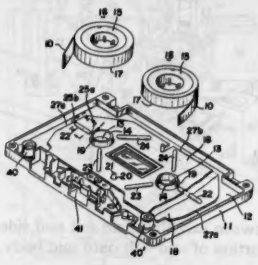
1. A brake apparatus in combination with a supply reel for a cable or the like, the combination comprising:
- a reel support including an arbor for mounting said reel and a saddle to carry said arbor for rotation about an axis, said reel support further including side plates at either side of said saddle,
- a rotor including a disc supported by said arbor for rotation about said axis,
- means engageable with said reel to drivingly couple said rotor to said supply reel,
- a brake frame including brake pads for engaging opposed arcuate segments of said disc, said brake frame further including a support plate having openings at opposite sides thereof facing toward said side plates,
- a piston and cylinder assembly supported by said brake frame,
- resilient means supported by said brake frame for urging said brake pads out of contact with said disc,
- latch means including movable plungers carried by the side plates of said reel support to engage in the openings of the support plate of said brake frame for releasably supporting said brake frame and transferring brake torque from said brake pads to said reel support, and
- means to deliver a pressurized fluid medium to said piston and cylinder assembly to move the brake pads into frictional engagement with said disc for controlling rotation of said supply reel.

4,127,242
MAGNETIC RECORDING TAPE CARTRIDGE

Noritsugu Hashimoto, and Shigeo Sasaki, both of Kyoto, Japan, assignors to Hitachi Maxell, Ltd., Ibaragi, Japan

Filed Jul. 18, 1977, Ser. No. 816,807
Claims priority, application Japan, Jul. 16, 1976, 51-95582[U]; Mar. 18, 1977, 52-33490[U]
Int. Cl.[2] G03B 1/04; G11B 15/32
U.S. Cl. 242—199 8 Claims

1. A magnetic recording tape cartridge which comprises a casing composed of first and second plates joined together to provide a tape chamber, at least one of said first and second plates having a pair of spaced holes, a pair of hubs having respective openings adapted to permit insertion of a drive shaft therethrough and housed within said tape chamber with said openings respectively aligned with said holes on either of the first or second plates, at least one slip sheet having long and short sides positioned within the tape chamber and sandwiched between the hubs and either one of said first and second plates, said slip sheet having a pair of drive shaft inserting holes and a plurality of resilient hollow convex ribs radially extending around each of said drive shaft inserting holes, each of said ribs being closed at both ends so that one end is situated at a point

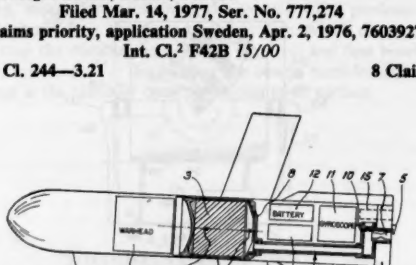


within a range of a circle of the shape of the hub to be placed on the drive shaft inserting hole and the other end at a point outside of the circle of the shape of said hub, said ribs being provided at least three in number around each drive shaft inserting hole in a manner to substantially divide the area surrounding said drive shaft inserting hole into at least three sections, at least one of said ribs being directed toward and terminating at or within a short side of the slip sheet, said slip sheet being inserted so that the convex ribs face the tape pack.

4,127,243
DEVICE FOR A MISSILE OR THE LIKE

Gunnar Jacobson; Per-Erik Jarnholt; Erik H. Lindholm, and Olof B. Olsson, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 14, 1977, Ser. No. 777,274
Claims priority, application Sweden, Apr. 2, 1976, 7603927
Int. Cl.[2] F42B 15/00
U.S. Cl. 244—3.21 8 Claims



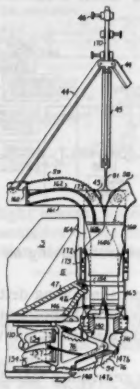
5. A hollow, guided projectile adaptable for delivering a warhead against a target, and comprising:
- a propellant motor assembly located at the center of gravity of the projectile;
- a recess formed in a wall of said propellant motor, said recess being eccentrically positioned with respect to the longitudinal axis of said projectile;
- a tubular assembly connecting with said recess and extending parallel to the longitudinal axis;
- a nozzle assembly positioned within a recess formed in a central portion of the rear surface; and
- means for joining an end of said tubular assembly with said nozzle assembly.

4,127,244

ROTARY WING AIRCRAFT MAST ARRANGEMENT

David R. Pender, 1018 Marion St., Columbia, S.C. 29201

Division of Ser. No. 735,130, Oct. 26, 1976. This application May 23, 1977, Ser. No. 799,174
Int. Cl.[2] B64C *27/22*
U.S. Cl. 244—7 R 1 Claim



1. A rotor craft having a universally flexible rotor mast, said mast comprising multiple elastomer mounts of sandwich formation including elastomer bodies bonded with metal plates arranged to be parallel to a load to be supported, high strength cables embedded in the elastomer bodies and anchored to the two opposing metal plates of the sandwich formation, said cables being substantially perpendicular to the faces of said opposing metal plates when there is no load on the mount, whereby under loading the elastomer of the sandwich formation is subjected to shearing stress, thereby placing the embedded cables under tension with a substantial component of the load carried by the cables, the embedded cables while under tension compressing the elastomer of the sandwich formation so that it is then under combined shear and compression stresses, and a static on-ground rotor mast lock to secure the rotor mast in an upright position and operating in conjunction with said mounts, said rotor mast lock constructed so that the latch receiving units thereof are attached to the upper non-rotating portion of the rotor mast and mating latch units formed above the opening of a stowage tube of the rotor craft, whereby on landing the rotor craft fuselage settles to a horizontal position and the rotor mast tilts until said latch receiving units on the mast come into contact with an upper surface stop of said mating latch units, said latch units having a trough at the bottom thereof so that as the fuselage settles to the ground and weight is removed from the rotor, the elastomer mounts allow the mast to be lowered, the mast latch receiving unit also being lowered and settling in said trough, and a spring-loaded latch lock automatically securing the latch receiving unit in said trough to lock the rotor mast, said latch lock being releasable by a pilot of the rotor craft on take off.

4,127,245

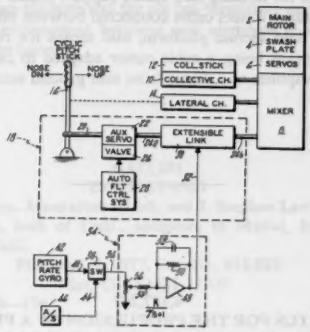
HELICOPTER PITCH RATE FEEDBACK BIAS FOR PITCH AXIS MANEUVERING STABILITY AND LOAD FEEL

Franklin A. Tefft, Killingworth; Don L. Adams, Fairfield, and Lou S. Cotton, Monroe, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 27, 1977, Ser. No. 791,622
Int. Cl.[2] B64C *11/34*
U.S. Cl. 244—17.13 6 Claims

1. A helicopter having a main rotor and controls therefor including a longitudinal cyclic pitch channel responsive to a pilot's cyclic pitch stick to provide a longitudinal cyclic pitch command input to the main rotor controls, in which the improvement comprises:

a pitch rate gyro having an output indicative of rotation in the pitch axis of the helicopter; and



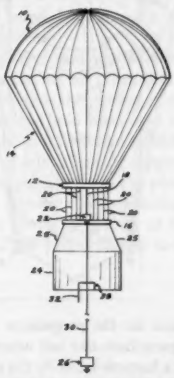
bias means associated with said longitudinal cyclic pitch channel and connected for response to the output of said pitch rate gyro to alter the longitudinal cyclic pitch command provided by said cyclic pitch channel by an amount proportional to the output of said pitch rate gyro in a direction to oppose the sensed pitch rate.

4,127,246

PARACHUTE AIR DROP LOAD IMPACT REDUCING SYSTEM

James R. Andres, 388 Mecca Dr., Vandalia, Ohio 45377

Filed Jul. 29, 1977, Ser. No. 820,279
Int. Cl.[2] B64D *1/14, 17/22*
U.S. Cl. 244—138 R 3 Claims



1. In a parachute cargo load drop system having a parachute canopy with a cargo load supported beneath the parachute, a system for reducing load impact with the ground, comprising: a first platform; a plurality of shroud lines for securing said platform to the parachute canopy; a second platform spaced from said first platform; means for securing the cargo load to said second platform; an elastic support means, connected between said first platform and said second platform for elastically suspending the second platform from said first platform; means, connected between said first platform and said second platform for holding said elastic support means in a relaxed state; a ground sensing probe; means for supporting said ground sensing probe a predetermined distance below said cargo load; means, responsive to said ground sensing probe, for releasing said holding means when the cargo load is a predeter-

mined distance from the ground to thereby permit the cargo load to free fall under the restraint of the elastic support means; said elastic support means including a plurality of elastic cords connected between the first platform and the second platform; said means for holding said elastic support means in a relaxed state including a steel cable connected between said first platform and said second platform; said means for releasing the holding means being a cable cutter adapted to cut said steel cable in response to a signal from said ground sensing probe.

4,127,247

APPARATUS FOR THE PROPULSION OF A PERSON BY THE FORCE OF WIND, ESPECIALLY FOR SKIERS

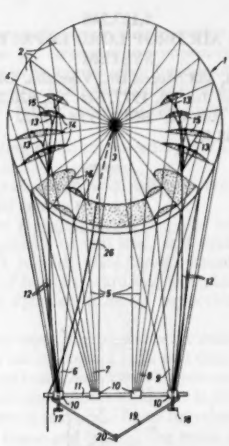
Dieter Strasilla, Trankestr. 38,, D-7800 Freiburg, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,865

Claims priority, application Fed. Rep. of Germany, May 6, 1976, 2619951

Int. Cl.[2] B64D *17/38*

U.S. Cl. 244—152 **11 Claims**



1. In an apparatus for the propulsion of a person utilizing wind power by a parachute-like sail where shroud lines of the sail are coupled to a harness worn by the user, an improvement comprising:

a holding device connected to said shrouds;

a coupling means for coupling said harness to the holding device, said coupling means including a quick release means for quickly decoupling said harness from said holding device;

at least one control line controlling an opening in said sail, said control line extending to within reach of said user; and

a break line having a first end attached to the apex of said sail and a second end directly coupled to said harness; whereby said user may control the direction of movement by pulling and releasing said control line and accomplish braking by decoupling said harness from said holding device with said break line remaining coupled to said harness and serving to collapse said sail.

4,127,248

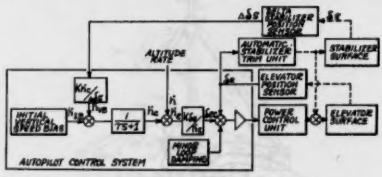
ADAPTIVE ENERGY MANAGEMENT FOR VERTICAL SPEED CONTROL OF AN AIRCRAFT

Jimmie H. Boone, and Robert D. Simpson, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 591,253, Jun. 27, 1975, Pat. No. 4,032,093. This application Dec. 16, 1976, Ser. No. 751,222

Int. Cl.[2] G05D *1/08*

U.S. Cl. 244—180 **1 Claim**



1. In combination in an aircraft having an elevator surface and a stabilizer surface:

first signal processing means including delta stabilizer position-sensing means responsive to positioning of said stabilizer surface for providing a first signal representative of h_{VB};

initial vertical speed bias generating means for providing a signal representative of h_{IB};

second signal processing means responsive to said first signal representative of h_{VB} and said signal representative of h_{IB} for providing a signal representative of h_c;

third signal processing means responsive to said signal representative of h_c and a signal representative of altitude rate for providing a signal representative of δ_{ec};

elevator position-sensing means responsive to said elevator surface for providing a signal representative of δ_e;

an automatic stabilizer trim unit responsive to said signal representative of δ_e, said automatic stabilizer trim unit having an output terminal coupled to said stabilizer surface;

a power control unit having an input terminal and an output terminal;

fourth signal processing means coupled to said input terminal of said power control unit, said fourth signal processing means responsive to said signal representative of δ_e, said representative of δ_{ec} and a minor loop damping signal; and

circuit means coupled between said elevator surface and the output terminals respectively of said automatic stabilizer trim unit and said power control unit.

4,127,249

APPARATUS FOR COMPUTING THE RATE OF CHANGE OF ENERGY OF AN AIRCRAFT

Antonius A. Lambregts, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 7, 1977, Ser. No. 766,175

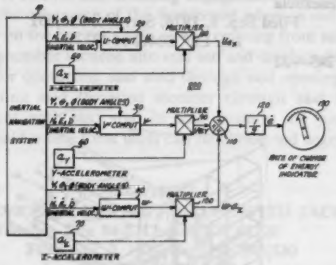
Int. Cl.[2] G05D *1/00*

U.S. Cl. 244—191 **11 Claims**

1. In combination for use in an aircraft:

an aircraft flight control system; means for sensing the inertial acceleration of the aircraft; means for sensing the inertial velocity of the aircraft, means for calculating the inner vector product of inertial acceleration and inertial velocity of the aircraft in response to each said sensing

means and, generating a signal representative of said inner vector product; and,



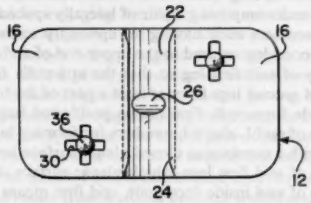
said aircraft flight control system being responsive to said signal representative of the inner vector product of inertial acceleration and inertial velocity of the aircraft.

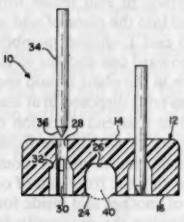
4,127,250

WIRE CLAMPING DEVICE

Edwin G. Swick, Bartlett, Ill., assignor to ITW — Illinois Tool Works, Chicago, Ill.

Filed Jul. 18, 1977, Ser. No. 816,624
Int. Cl.[2] H02G 3/26; F16L 3/04
U.S. Cl. 248—71 7 Claims





1. A wire clamping clip comprising a block member with substantially parallel workpiece engaging surface and exposed top surface, a recess formed in the workpiece engaging surface completely traversing said surface in a predetermined direction, means creating a predetermined restricted mouth opening for said recess which is of less transverse dimension than the maximum transverse dimension of the recess, protuberance means formed in a wall of said recess adapted to embed into the outer surface of an associated wire to be located in said recess, a pair of through bores formed in said block member located on opposing sides of said recess, a pair of pin members carried in said bores with top regions of the pins extending upwardly from the exposed top surface of the block member and penetrating point regions located within the respective bore so as to not substantially protrude beyond the workpiece engaging surface, the bores including differing cross-sectional configurations from the top surface to the workpiece engaging surface, the upper regions of the bores being cylindrical of a diameter substantially equal to the diameter of the pins providing a tight, retention fit between the two members, the lower regions of the bore including a plurality of circumferentially spaced rib-like wall surfaces providing continuously longitudinal engagement between the bore and the pin but permitting minimization of surface engagement between said elements in the lower region of the bores.

4,127,251

DOLL STAND

Jurgis Sapkus, Manhattan Beach, and J. Stephen Lewis, Pacific Palisades, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 8, 1977, Ser. No. 814,022
Int. Cl.[2] F16M 11/00
U.S. Cl. 248—176 11 Claims

1. In a stand for supporting a doll, the combination comprising:

A base;

a clip member for releasably receiving a lower portion of one leg of the doll; and

a rod member coupled to said clip member and to said base, said rod member having an offset in a first direction for providing clearance for the portion of the leg intermdiate said clip member and said base, said rod member being angularly disposed in a direction generally perpendicular to the direction of said offset for supporting the leg at an angle to a line perpendicular to the plane of the base, the angle being in a direction for supporting the doll by said one leg with the center of gravity of the doll in general alignment with a line perpendicular to the base.

4,127,252

SUSPENSION SUPPORT UNIT FOR LARGE OBJECTS

Gary L. Splawn, Rte. 1, Chesnee, S.C. 29323

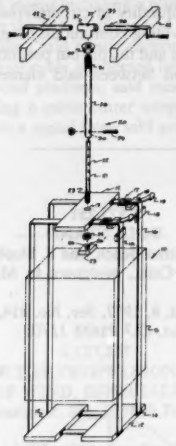
Filed Aug. 1, 1977, Ser. No. 820,573
Int. Cl.[2] B42F 13/00
U.S. Cl. 248—333 11 Claims

1. A suspension support for large objects comprising:

(a) object encircling means comprising a plurality of object plates for location around an object to be suspended, and at least one elongated element associated with said plates and being receivable around said object, said elongated element having adjustable fastening means associated therewith;

(b) an elongated rigid rod means associated with said object encircling means at one end thereof, said rigid rod means having adjustment means associated therewith to produce an adjustable rigid connection with said object encircling

means and providing a tight relationship between said object encircling means and said object; and



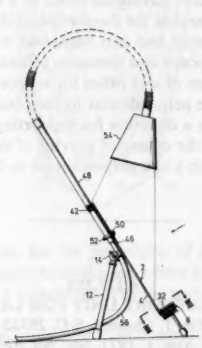
(c) securement means associated with an opposite end of said rigid rod means and being adapted for securement to an overhead structure.

4,127,253

HOLDER FOR BOOKS, MUSIC SHEETS, OR OTHER SHEET-CONTAINING ARTICLES

Yehuda Ben-Lea, 10 Nachmani St., Tel Aviv, Israel

Filed Aug. 10, 1977, Ser. No. 823,457
Int. Cl.² A47B *97/04*
U.S. Cl. 248—453 **6 Claims**



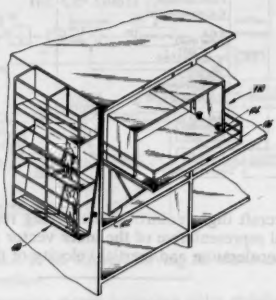
1. A holder for books, music sheets, or other sheet-containing articles comprising: a stand having a back rest and a front ledge at the lower end of the back rest projecting forwardly thereof for supporting the article to be held thereby; a plurality of legs for supporting the back rest in an inclined position; and a coil spring mounted at each of the two opposite ends of the ledge with the loops thereof substantially parallel to the plane of the back rest for releasably engaging the lower ends of the sheets of the article supported by the stand, said front ledge being formed with a pair of spaced parallel slots at each end extending transversely of the ledge, each of said coil springs being received in each pair of said slots.

4,127,254

CONCRETE BUILDING CONSTRUCTION FORMS

Ghetel P. Kahan, Av. Sojo Edificio El Escorial, El Rosal, Caracas, Venezuela

Filed Sep. 8, 1976, Ser. No. 721,651
Int. Cl.² E04G *11/02*
U.S. Cl. 249—22 **13 Claims**



1. A form for use in constructing a poured concrete structure comprising an inside form unit having an inverted U-shape with upwardly extending, outwardly facing side surfaces and an upwardly facing top surface disposed transversely of the upper ends of the side surfaces, said inside form unit having an open front end and an open rear end with said side surfaces and top surface extending between the front and rear ends, said inside form unit comprising a pair of laterally spaced, inverted L-shaped members each having an upwardly extending first leg and a second leg secured to the upper end of and extending transversely of said first leg so that the upwardly facing surfaces of said second legs form at least a part of the top surface of said inside form unit, first means positioned between said second legs of said L-shaped members for forming in combination therewith a continuous closed planar surface between the upper ends of said first legs which planar surface defines the top surface of said inside form unit, said first means including a central key removably inserted into the plane of said second legs with said central key having an upwardly facing surface which is disposed in the continuous closed planar surface defining the top surface of said inside form unit when said central key is inserted into the plane of said second legs, second means connected to said L-shaped members for forcing said L-shaped members toward one another so that said central key is retained in position in the plane of said second legs, a plurality of said inside form units disposed in at least one row extending in the front end to rear end direction of said inside form units with the interiors of said inside form units affording a tunnel-like arrangement, fourth means mounted on said inside form units for connecting the front end of one said inside form unit to the rear end of another said inside form unit disposed in said one row for aligning the outwardly facing side surfaces and top surfaces of said inside form units, said fourth means comprising a support member secured to and extending along and closely spaced from the front end edges and rear end edges of said inside form units, a union clamp mounted on said support members for connecting said inside form units together, an aligning device mounted on said support members for aligning the outwardly facing surfaces of said inside form units, said support members including studs secured to and extending inwardly from said support members within said inside form units, said union clamp comprising an elongated plate having a dimension in the elongated direction sufficient to span the distances between said studs on said support members on the juxtaposed edges of said inside form units, each said plate having a slot extending inwardly from the edge of the plate extending in the elongated direction and said slot extending obliquely to the elongated direction, said slot arranged to fit over and in sliding engagement with one of said studs on one

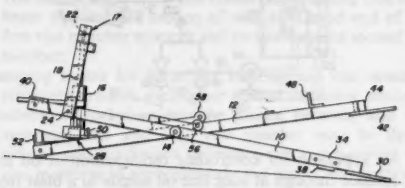
of the juxtaposed edges, said plate having an opening therethrough and said opening being elongated in the elongated direction of said plate and spaced from said slot, said opening arranged to fit over and in sliding engagement with one of said studs on the other one of the juxtaposed edges, a nut fixed to said plate on the opposite side of said opening from said slot, a threaded member secured into said nut and displaceable therethrough for contacting said stud through said opening so that by threading said threaded member through said nut into engagement with said stud in said opening the juxtaposed edges of said inside form units can be connected together.

4,127,255

LEVERAGE DEVICE FOR USE WITH JACK

Charles Wooding, Box 34-2, Chenoa, Ill. 61726

Filed Apr. 3, 1978, Ser. No. 893,330
Int. Cl.² B66F *3/22*
U.S. Cl. 254—133 R **10 Claims**



1. A portable leverage system for use with various jacking means having an operative end for cooperating with a jack and a lifting end for engaging the object to be raised, comprising a pair of nested elongated rigid inner and outer frame members, said nested frames being designed to occupy a minimum of space when nested, pivot means connected between said inner and outer frames to provide lever means having a scissoring motion, a generally U-shaped lifting bail connected to an operative end of the system at one end of one of said nested frame members, the open end of said U-shaped bail being hingedly connected to the said one frame at said operative end so that the bail can rotate from a closed position within said space and in line with said nested frames to an active position generally disposed at right angles thereto adjacent to the end of said one frame, a floor means integral with the operative end of the other of said frames, a foot pad means integral with said one frame at the lifting end of said system that is opposite the operative end, an object engaging pad means integral with the lifting end of said other frame, whereby a jack can be fitted between said floor and said bail when the bail is in its active position so that upon activation of the jack said frames move through their scissoring action to raise and lower the object engaging pad away from and toward the foot pad means.

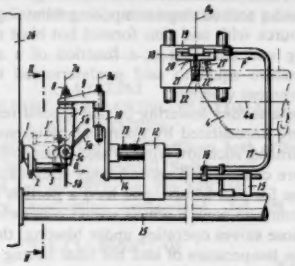
4,127,256

FLAME-CUTTING APPARATUS

Hans Jacobs, Leverkusen, Germany, assignor to J.U.W. Muller, Maschinen und Amaturenfabrik GmbH, Leverkusen, Germany

Filed Sep. 13, 1977, Ser. No. 833,071
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643268
Int. Cl.² B23K *7/04*
U.S. Cl. 266—57 **10 Claims**

1. In flame cutting apparatus having a burner with an axial jet flame, the burner being guided for movement along a curved path corresponding to the line of intersection of two pipes: the provision of means for pivotably moving said burner around an axis perpendicular to the axis of said jet flame including a template corresponding to a chamfer to be produced in the surface of the element being cut by the jet flame, said template including two parts, one being pivotably movable with respect to the other about an axis common to the surfaces of both parts, and follower means for pivotably moving the



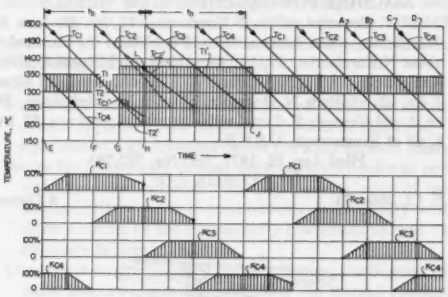
burner in correspondence with the angular position of said parts of the template.

4,127,257

PROCESS FOR OPERATING A PLURALITY OF REGENERATIVE HOT BLAST STOVES FOR SUPPLYING HOT BLAST TO A BLAST FURNACE

Rudolf Müller, Merzenich; Josef Seeger, and Konrad Fink, Duren, all of Germany, assignors to Hermann Rappold & Co. GmbH., Duren, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 776,371, Mar. 10, 1977, abandoned. This application May 31, 1977, Ser. No. 802,194
Int. Cl.² C21B *9/10*
U.S. Cl. 266—44 **1 Claim**



1. In a process for operating a plurality of regenerative hot blast stoves for heating cold blast from a constant supply source and for supplying the thus formed hot blast at a selectively variable predetermined temperature and at a constant volume to a blast furnace, the stoves being operated under a staggered-parallel process wherein each stove is alternately operated under a fixed heating cycle wherein no cold blast is supplied to the stove and no hot blast issues therefrom and a fixed blasting cycle wherein cold blast is supplied to the stove and issues therefrom as hot blast, the hot blast issuing from each stove progressively decreasing in temperature during the blasting cycle thereof, said fixed heating cycles and said fixed blasting cycles of said stoves being initiated by selective closing and opening, respectively, of throttle valves positioned in pipes connecting said cold blast supply source to each of said stoves, the initiation of the cycles of the stoves being staggered in time with respect to each other such that at any given time hot blast issues from more than one of said stoves but at different temperatures, the temperature of the hot blast issuing from the stoves being regulated to said predetermined temperature in a two-stage operation including a first stage comprising mixing relatively cooler and warmer hot blast issuing from those stoves operating under blasting and controlling said

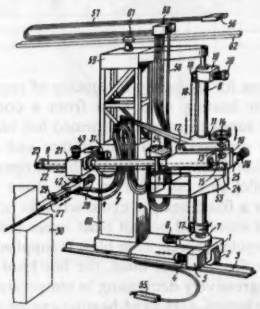
mixing by regulating the closing and opening of said throttle valves as a function of a first reference temperature greater than said predetermined temperature to thereby maintain the thus formed hot blast mixture at said first reference temperature, and a second stage comprising admixing cold blast from said source with said thus formed hot blast mixture and controlling said admixing as a function of a second reference temperature equal to said predetermined temperature, the improvement wherein:

upon a sudden lowering of said second reference temperature necessitated by operating requirements of the blast furnace, such lowering of said second reference temperature causing said second stage temperature regulation to use for said admixing at least a portion of the cold blast from said source which would otherwise be supplied to those stoves operating under blasting, thereby increasing the temperature of said hot blast issuing from said stoves to an extent such that it becomes impossible for said first stage temperature regulation to maintain said hot blast mixture at said first reference temperature by regulating the closing and opening of said throttle valves, and such that said throttle valves are not completely closed at the initiation of the heating cycles of the respective stoves, said first reference temperature is raised to an increased first reference temperature by an amount such that, even at the increased temperatures of said hot blast issuing from said stoves, said first stage temperature regulation can maintain said hot blast mixture at said increased first reference temperature, and such that said throttle valves are completely closed at the initiation of said heating cycles of said respective stoves.

4,127,258
MACHINE FOR GAS-CUTTING OF METALS

Mikhail Y. Brovman, ulitsa N.Kurchenko, 12, kv. 22; Ivan K. Marchenko, ulitsa Lenina, 6, kv. 94; Nikolai Y. Mushenko, ulitsa N.Kurchenko, 15, kv. 48; Alfred A. Pilipenko, ulitsa Katerinicha, 17, kv. 28; Vladimir A. Tkalenko, prospekt Mira, 2, kv. 62; Vladimir N. Romadin, ulitsa B.Khmelnitskogo, 28, kv. 2, and Gennady P. Larin, ulitsa Sotsialisticheskaya, 57, kv. 5, all of Kramatorsk, U.S.S.R.

Filed Apr. 15, 1977, Ser. No. 787,763
Int. Cl.[2] B23K *7/08*
U.S. Cl. 266—73 **4 Claims**

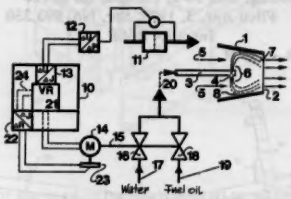


1. A machine for gas-cutting of metals, comprising: a mobile platform; a rotatable column mounted on said mobile platform; a crossbeam mounted in a cantilever fashion on said rotatable column and adapted for motion in a direction along the axis of said rotatable column; a carriage mounted on the free extremity of said crossbeam for reciprocation therealong, for rotation in a plane perpendicular to the axis of said crossbeam; a rod attached to said crossbeam perpendicular to the axis of said crossbeam for rotation in a plane parallel to said axis of said crossbeam and also for longitudinal motion in the same plane; a cutting torch rigidly coupled with said rod; and a copying arrangement operatively coupled with said cutting torch.

4,127,259
APPARATUS FOR CONTROLLING THE INJECTION OF OIL INTO A BLAST FURNACE

Friedrich A. K. Lüth, Leugplatz 3, 4 Düsseldorf-Oberkassel, Fed. Rep. of Germany

Division of Ser. No. 512,152, Oct. 4, 1974, Pat. No. 4,040,817.
This application May 25, 1977, Ser. No. 800,519
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1973, 2349930
Int. Cl.[2] C21B *7/16*; F27B *1/16, 1/26*
U.S. Cl. 266—83 **5 Claims**



1. An apparatus for controlling the injection of oil into a blast furnace through at least one oil nozzle in a blast tuyere, the apparatus comprising:

a measuring means for measuring the flow of blast air and adapted to be positioned in the conduit of the blast tuyere;

a ratio controller means connected to the blast air flow measuring means for controlling the ratio of oil volume to blast air volume;

a common connection means;

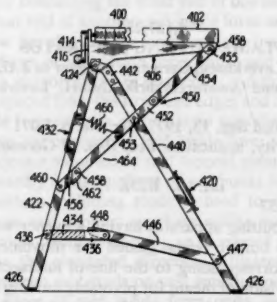
a water valve and an oil valve connected to the common connection means, both valves connected to a common conduit which is adapted to be connected to the oil nozzle;

a servo means connecting the ratio controller means to the common connection means and controlling the opening and closing of the water valve and the oil valve in proportion to one another.

4,127,260
WORKBENCH WITH QUICK SETTING VISE STRUCTURE

Ronald P. Hickman, Waltham Abbey, England, assignor to Inventec International Limited, Sark, Channel Islands

Filed Apr. 2, 1976, Ser. No. 673,066
Int. Cl.[2] B25B *1/22*
U.S. Cl. 269—139 **22 Claims**



1. A workbench comprising:

first and second elongate vise members;

a collapsible supporting structure, including a supporting

framework having bearing surfaces defining a plane of support underlying and supporting said vise members, and a folding leg structure foldable between (1) an erected position in which the leg structure supports said vise members at a convenient working height above the floor and (2) a folded position in which the leg structure lies adjacent said vise members;

means operatively connecting said first vise member to said supporting framework for (1) rectilinear motion towards and away from said second vise member and (2) rotational motion in said plane of support relative to said second vise member;

independently releasable latching means associated with each end of said first vise member for (1) when latched, latching said associated end of said first vise member against rectilinear motion away from said second vise member and from any angular motion that carries the center of said first vise member away from said second vise member and (2), when released, permitting free rectilinear and angular motion of said associated end of said first vise member towards and away from said second vise member;

clamping means for forcefully moving said vise members relatively towards each other a short clamping stroke;

whereby a workpiece may be placed between said vise members, and said first vise member may be drawn toward said workpiece to reduce the gap between said vise members to approximately the size of the portion of said workpiece between said vise members, whereupon said clamping means may be operated to grip said workpiece forcefully between said vise members.

4,127,261

AUTOMATIC SIGNATURE OPENER

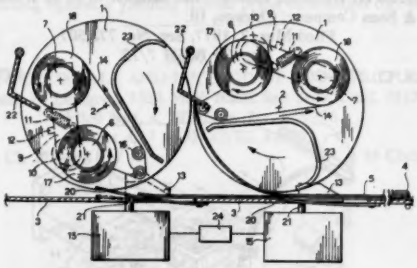
Gianattilio Meratti, Via Colle Pasta 33, Torre de' Roveri (Bergamo), Italy

Filed Jul. 1, 1977, Ser. No. 812,308

Claims priority, application Italy, Dec. 14, 1976, 69966 A/76

Int. Cl.² B65H *5/30*

U.S. Cl. 270—55 **14 Claims**



1. An automatic signature opener for opening continuously moving signatures as they are fed to a book sewer, the opener comprising:

conveying means for continuously conveying a succession of signatures along a conveying path;

at least one operative member adjacent the path of the signatures,

the operative member providing an operative surface on which there is a pressure-sensitive adhesive;

motion-inducing means for inducing relative motion between the operative member and the respective signatures, whereby the operative surface is brought into contact with a first part of each successive signature, to thereby engage the first part, and to draw the first part away from a second part of the signature;

a separating member for insertion between the first and second parts of the signature, to hold them apart;

releasing means for subsequently releasing the first part of the signature from the operative surface; and

means for replacing the pressure-sensitive adhesive of the operating surface after the release of the first part of the signature.

4,127,262

APPARATUS FOR DESTACKING FLEXIBLE FLAT STRUCTURES

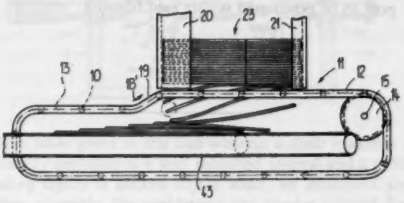
Jürg Eberle, Hinwil, and Willy Leu, Pfäffikon, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Jul. 25, 1977, Ser. No. 818,819

Claims priority, application Switzerland, Jul. 29, 1976, 9713/76

Int. Cl.² B65H *5/08*

U.S. Cl. 271—12 **9 Claims**



1. An apparatus for destacking a stack of flexible flat structures, especially unfolded or folded sheets or printed products, comprising:

stack support means comprising revolvingly driven rolls moving in a predetermined direction of travel;

contact rails arranged above the stack support means for defining a stack support surface;

said stack support surface having corners;

one of said corners being dispositioned obliquely and directed opposite to the direction of travel of said rolls;

a separation device arranged below the stack support means;

means for revolvingly driving the separation device to periodically move between two neighbouring rolls of said driven rolls in order to continuously downwardly withdraw a corner of the momentarily lowermost located flat structure between said rolls;

a conveyor device disposed below and engaging beneath the stack support means for outfeeding the printed products withdrawn from the stack; and

the conveyor device having a direction of movement forming an angle with respect to the direction of travel of said rolls.

4,127,263

PORT-CLOSURE FOR VACUUM SHEET FEEDER

Stephen J. Wenthe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,259

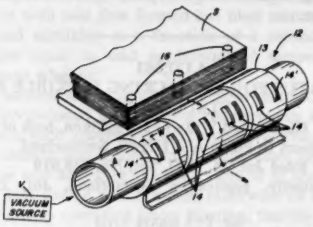
Int. Cl.² B65H *3/12*

U.S. Cl. 271—96 **3 Claims**

1. In a sheet feeding apparatus including a movable vacuum housing defining a plurality of ports which communicate with the interior of the housing for vacuum tacking sheets to the exterior of said housing during transport of such sheets seriatim along a transport path, means for insuring effective feeding of sheets having at least one hole therethrough, said means comprising:

an elongate resilient member insertable through any port in said housing which is aligned with any such hole during transport of such sheets for selectively closing such port, said member having a first portion which corresponds in size and shape to such port and a second portion spaced

from said first portion for engaging the interior of said housing to urge said first portion into closing relationship



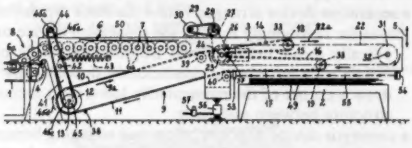
with such port when said member is inserted through such port to be positioned within said housing.

4,127,264

APPARATUS FOR DEPOSITING OBJECTS OF SMALL THICKNESS, ESPECIALLY SKINS, E.G. FOR THE STACKING THEREOF

Aime G. Fayolle, Grenoble, France, assignor to Metraplan SPAA, Claix, France

Filed Jan. 14, 1977, Ser. No. 759,370
Claims priority, application France, Jan. 15, 1976, 76 01496
Int. Cl.² B65H *29/36*
U.S. Cl. 271—191 **21 Claims**



1. An apparatus for depositing or stacking objects of small thickness, comprising:

a support having an upstream end adapted to receive said objects in succession and a downstream end;

means at said downstream end for receiving objects to be deposited and disposed below said support;

an endless conveyor belt mounted on said support;

a drum on said support at said upstream end, said conveyor belt passing around said drum and forming a pair of stretches extending from said drum;

a pair of rollers engageable with said conveyor belt and displaceable relative to said drum to define a pair of retractable and extendable conveyor arms at said downstream end of said support;

a pair of displacing elements disposed laterally of said belt and movably mounted on said support for cyclically displacing said rollers to extend an upper one of said arms while retracting a lower one of said arms simultaneously; and

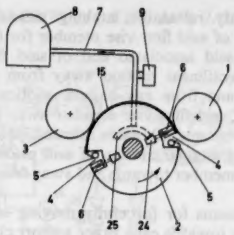
a bar affixed to said conveyor belt and engageable with said support upon the displacement of said conveyor belt around said drum and said rollers to immobilize said bar for retaining a portion of said conveyor belt between said rollers while said rollers are displaced by said elements.

4,127,265

SHEET SENSING DEVICE IN A ROTARY PRINTING PRESS

Arno Wirz, and Willi Becker, both of Bammental, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed May 11, 1977, Ser. No. 795,874
Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621250
Int. Cl.² B65H *7/12*
U.S. Cl. 271—260 **9 Claims**



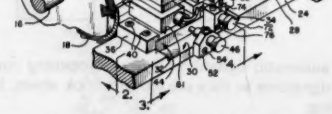
1. Sheet sensing device in a rotary printing press having a sheet transferring drum provided at respective regions thereof with gripping means for gripping the leading and trailing edges of a sheet being transferred, comprising sensing nozzles disposed in the region of the gripping means for gripping the trailing edge of a sheet, said sensing nozzles extending across the drum over a distance corresponding to the entire width substantially of the sheet being transferred, a line system connecting said sensing nozzles to a pneumatic pressure-generating source, and pressure monitoring means connected in said line system between said sensing nozzles and said pneumatic pressure-generating source.

4,127,266

PROXIMITY CALIPER

Charles H. Williams, Chicago, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Mar. 2, 1977, Ser. No. 773,507
Int. Cl.² B65H *7/12*
U.S. Cl. 271—263 **4 Claims**



1. In an apparatus for feeding printed sheets having a frame, a rotatable drum carrying a metal gripper a bar attached to said frame adjacent and spanning said rotatable drum, the gripper adapted to receive a printed signature between said gripper and said rotatable drum, the improvement comprising:

a first movable plate slidably mounted on the bar for movement toward and away from the drum;

a first proximity sensor mounted on the movable plate;

a second plate slidably received by the first movable plate for movement toward and away from the drum; and

a second proximity sensor mounted on said second plate, said sensors providing electrical signals indicative of the

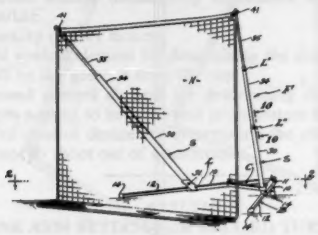
position of the metal gripper with respect to the first and second proximity sensors as the gripper traverses said first and second proximity sensors, wherein the position of the metal gripper with respect to said first and second proximity sensors is determined by the thickness of the printed signature.

4,127,267

COLLAPSIBLE FRAME WITH HANGING NET BALL ARRESTING APPARATUS

Marvon W. Bay, 706 James Blvd., Apt. 5, Worthington, Minn. 56187, and Joel E. Di Marco, 4288 Revere Pl., Culver City, Calif. 90230

Filed May 20, 1977, Ser. No. 798,793
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—26 A **23 Claims**



1. A ball arresting apparatus including; a net, a base comprised of a pair of substantibly horizontal forwardly divergent legs having ground engagement at a rearward apex and the forward extremities thereof, a pair of standards, each standard being pivotally coupled to one of said base legs and having one of its ends resting against a stop on one of said base legs and cantilevered upwardly and forwardly from and in divergent alignment with one of said legs and free to swing rearwardly respectively, and there being means hanging said net from spaced peaks of the other end of said standards to drape therefrom by gravity for the interception and arrestment of balls impacting against a yielding frontal plane established thereby.

4,127,268

TETHERED BALL AND METHOD OF MANUFACTURE

Thomas E. Lindgren, 1354 Mich Bluff, San Jose, Calif. 95131

Filed Nov. 4, 1976, Ser. No. 738,796
Int. Cl.[2] A63B *43/02, 45/00*
U.S. Cl. 273—58 C **15 Claims**

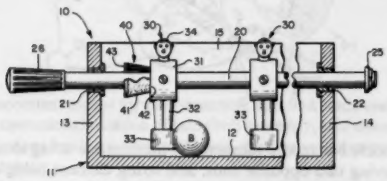
9. A return ball toy comprising:
a resilient ball;
an elastic tape, of a width substantially greater than its thickness and having a frictional fabric covering thereon, said tape extending through a first hole in said ball and passing through a second hole adjacent said first hole in said ball to thereby form a loop of tape at the surface of said ball; and a wrist strap formed by a loop in said tape at the end of said tape opposite the end which is attached to said ball, said tape having a sufficiently high coefficient of friction with the inside walls of the holes through which said tape passes such that the tape is securedly affixed to said ball essentially only due to the frictional engagement between said ball and said tape.

4,127,269

SHOCK ABSORBER AND ASSEMBLY

Frederick G. Rest, 175 E. Delaware, Apt. 8011, Chicago, Ill. 60611

Filed Feb. 16, 1977, Ser. No. 769,261
Int. Cl.[2] A63F *7/06*
U.S. Cl. 273—85 D **3 Claims**



2. In a table game or the like wherein a shaft is axially and rotationally movable in a wall mounted journal and a radially extending figure is affixed to the shaft, an improved shock absorber assembly for cushioning the impact of said figure against a surface on the wall, comprising:
a. a shock absorber member mounted on said shaft immediately adjacent said figure between said figure and said surface,
b. said member comprising a body formed of resilient material with a larger diameter end and a smaller diameter end and containing an axial bore through which said shaft extends,
c. a first segment of said bore immediately adjacent said figure having cross-sectional dimensions such that said first bore segment snugly grips said shaft and said member is movable with said shaft, and
d. a second segment of said bore having cross-sectional dimensions such that an inner surface of said second bore segment is spaced radially outwardly from said shaft,
e. said member being deformed against said surface as said figure is moved toward said surface, the resistance force to such movement created by the deforming member initially increasing on a relatively low slope to a point where it suddenly decreases to permit the figure to move immediately adjacent said wall, after which further movement is against rapidly increasing resistance force,
f. said member also comprising a relatively low friction coefficient bearing element molded unitarily with said body on said larger diameter end of said body,
g. said bearing element engaging said surface when said figure is drawn sufficiently toward said surface and permitting easy rotation of the shaft in such relationship.

4,127,270

OCCUPATIONAL GAMES EQUIPMENT

Willem J. Pretorius, Roodepoort, South Africa, assignor to Lenbo Investments (Proprietary) Limited, Johannesburg, South Africa

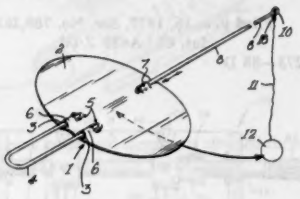
Filed Mar. 1, 1977, Ser. No. 773,409
Claims priority, application South Africa, Mar. 3, 1976, 76/1287
Int. Cl.[2] A63B *67/10*
U.S. Cl. 273—97 R **7 Claims**

1. Occupational games equipment, comprising:
a bat, including a generally disk-shaped head having two opposite faces, and a generally radially outwardly extending handle secured to the bat head;

an elongated, substantially rigid but somewhat resilient rod member having two opposite ends;

means securing said rod member adjacent one end thereof to the bat head so as to project radially outwardly therefrom, substantially in diametrical opposition to said handle, said rod member having means defining an attachment point, distally of said bat head, adjacent the opposite end of said rod member;

a resilient ball;



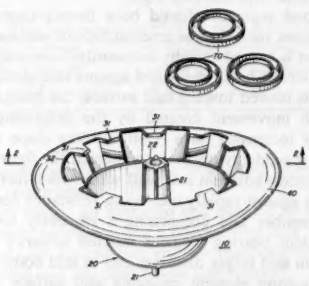
a flexible but axially substantially inextensible string element having two opposite ends, said string element being connected at one said end to said ball and at the other said end to said attachment point, said string element being of such length that when said string element is fully extended, said ball tethered thereby is positioned to alternatively strike either face of said bat head generally centrally of such face.

4,127,271

COMBINATION TOY TOP, PROJECTILE TOY AND BATH TOY

Matthew A. Moustakas, Mercerville, N.J., assignor to CBS Inc., New York, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,267
Int. Cl.[2] A63B 67/06
U.S. Cl. 273—100 6 Claims



1. A game device, comprising, in combination:

a cup-shaped receptacle having a tip protruding from the outer apex thereof and a central stem extending upwardly from the bottom inner surface thereof, said receptacle having a retaining rim which comprises a plurality of spaced tabs extending inwardly from the inner surface thereof at about the periphery thereof; and

a plurality of ring projectiles having outer dimensions proportioned sufficiently small to fit between said stem and the rim of said receptacle and having central openings proportioned sufficiently large to fit over said stem;

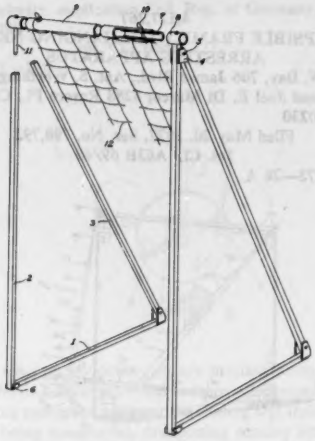
whereby upon rapid twisting and release of said stem, said receptacle spins and projectiles accurately tossed toward said receptacle encircle said stem and are retained thereon or are captured by said receptacle and retained therein by said rim.

4,127,272

PORTABLE SOCCER GOAL

Gordon G. Pennell, 9417 Daryl Dr., Kalamazoo, Mich. 49002

Filed Apr. 19, 1977, Ser. No. 780,686
Int. Cl.[2] A63B 63/00
U.S. Cl. 273—102 R 5 Claims



1. A portable soccer goal, comprising:

(a) a crossbar which can be disassembled into a plurality of sections for portability;

(b) two collapsible triangular end supports with hinge fasteners on two corners and a pin fastener on the third;

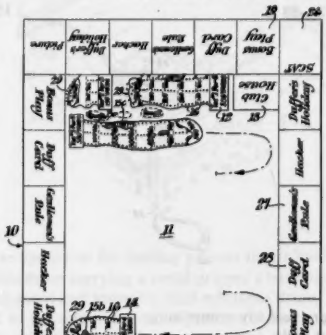
(c) pivotal means of attaching said crossbar and said end supports which allows the end supports to swivel on a length of pipe attached to the crossbar, thereby facilitating assembly of the goal.

4,127,273

SIMULATED GOLF GAME

Domenico R. Bonvetti, III, 130 Jay Dr. Chelsea Estates, New Castle, Del. 19720

Filed Aug. 22, 1977, Ser. No. 826,318
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—245 10 Claims



1. Apparatus for a golf game comprising, in combination, a game board containing on its top surface a first set of

indicia indicating a plurality of golf holes comprising fairways, greens and hazzards;

as to each hole, a series of perforations each capable of holding therein a first marker, said perforations being related to a second set of indicia indicating the distance a given perforation is from the given green;

said first marker;

said second set of indicia;

a plurality of cards each of which indicates a particular golf shot and its effect;

a plurality of game squares on said board some of which bear names related to a plurality of chance cards each of which indicates a move to a named game square and the effect of said move, there being at least one game square bearing the term "SCAT" or the like which relates only to the payment of play money;

said plurality of chance cards;

a second marker distinctively identifiable with said first marker;

a plurality of play money;

a first control element for determining the distance a given ball on the green is from the cup;

a second control element for determining the number of putts needed to hole-out said given distant ball; and

a third control device for determining the effect of an attempt to shoot out of a sandtrap.

4,127,274

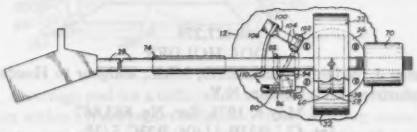
TONE ARM SYSTEM FOR RECORD TURNTABLE

Joseph W. Griffith, 8705 SW. White Ct., Portland, Oreg. 97225

Continuation of Ser. No. 739,522, Nov. 8, 1976, abandoned. This application Jan. 12, 1978, Ser. No. 868,903

Int. Cl.[2] G11B *3/18*

U.S. Cl. 274—23 R **8 Claims**



2. A tone arm system for a disc record turntable, comprising:

(a) an elongated tone arm having a stylus at one end thereof,

(b) a gimbal ring support member,

(c) inner and outer substantially concentric gimbal rings,

(d) a first pair of resilient bands of elastomeric material interconnecting the inner and the outer gimbal rings at substantially diametricllly opposite positions disposed in a substantially horizontal plane, and

(e) a second pair of resilient bands of elastomeric material interconnecting the outer gimbal ring and gimbal support member at substantially diametrically opposed positions on the other gimbal ring disposed in a substantially vertical plane,

(f) the inner gimbal ring supporting the tone arm within the outer gimbal ring for pivotal movement on the horizontal and vertical axes of the first and second pairs of resilient bands.

4,127,275

SELF-DISENGAGING STATIC SEAL

John W. Champlin, Jamestown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 17, 1978, Ser. No. 870,153

Int. Cl.[2] F16J *15/38, 15/54*

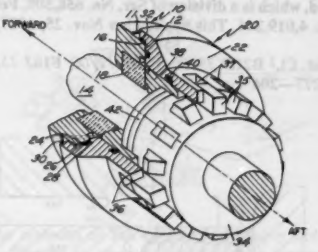
U.S. Cl. 277—6 **8 Claims**

1. A self-disengaging static seal system comprising:

a shaft assembly;

a dynamic seal means for providing a fluid boundary for said shaft assembly; static seal means having a first static seal for providing a fluid boundary in series with said dynamic seal means;

said shaft assembly having a second static seal abutting said dynamic seal means; and



disconnect means for disconnecting said first static seal upon operational rotation of said shaft assembly, said disconnect means having a third static seal abutting said dynamic seal means.

4,127,276

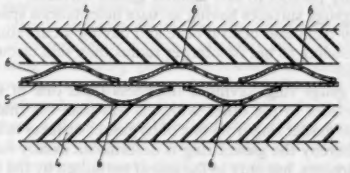
GROOVE SEAL

Erich Spicar, and Hans Yngvesson, both of, Ludvika, Sweden, assignors to Asea AB, Vasteras, Sweden

Filed Oct. 12, 1976, Ser. No. 731,797

Int. Cl.[2] F16J *15/18*

U.S. Cl. 277—188 R **1 Claim**



1. A groove seal for effecting a tight seal between a first and a second body, said first body having an open groove therein defined by a bottom and first and second side walls, first and second sealing strips of elastomeric material disposed in the groove, said first sealing strip contacting the first wall and the bottom, said second sealing strip contacting the second wall and the bottom, a support strip lying between and being spaced from said sealing strips, resilient elements arranged between the sealing strips on opposite sides of the support strip, each of the sealing strips having a predetermined cross-sectional size, said resilient elements being prestressed to a predetermined value whereby the sealing strips are bulged outwardly of the open side of the groove by the resilient elements so that, when the second body is pressed against the first body over the groove, the sealing strips are compressed by the second body inwardly of the groove against the action of the resilient elements to thereby effect a tight seal between the two bodies and the resilient elements constantly maintaining a predetermined pressure against the sealing strips even if the elasticity thereof diminishes during extended use.

4,127,277

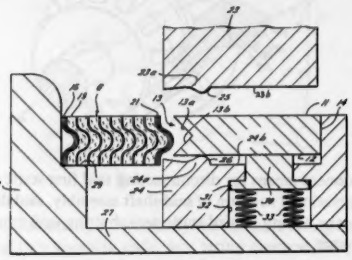
SPIRAL WOUND GASKET ASSEMBLY AND METHOD

A. B. Owen, and Bruce M. Gifford, both of Houston, Tex., assignors to Lamons Metal Gasket Company, Houston, Tex.

Continuation-in-part of Ser. No. 726,170, Sep. 24, 1976, abandoned, which is a division of Ser. No. 658,509, Feb. 17, 1976, Pat. No. 4,019,244. This application Nov. 25, 1977, Ser. No. 854,488

Int. Cl.[2] B21D *39/00;* B23P *11/00;* F16J *15/22*

U.S. Cl. 277—204 **6 Claims**



1. A spiral wound gasket assembly, comprising:

a gasket ring formed of alternating flexible non-metallic and metallic strips spirally wound together and with the exterior diameter portion substantially formed by the metallic strip:

said gasket ring having a central opening with the interior diameter portion substantially formed by the metallic strip;

said gasket ring having two parallel annular gasket surfaces formed by the annular edges of said alternating non-metallic and metallic strips and surrounding said central opening and extending in planes substantially perpendicular to the central axis of said central opening;

a solid metal gauge ring having a central bore defined by a circular inner wall which has an annular groove therein;

said gauge ring also having two parallel annular gauge surfaces surrounding said central bore and extending substantially parallel to said annular gasket surfaces;

said gauge surfaces having arcuate indentations spaced radially from said central bore and having a curvature corresponding to but of a larger radius than said circular inner wall;

said gauge ring having a thickness from one of its gauge surfaces to the other which is less than the thickness of said gasket ring from one of its gasket surfaces to the other whereby the gasket ring is deformable axially for sealing purposes, but only to the extent permitted by the thickness of said metal gauge ring; and

said annular groove being centrally located intermediate the flat surfaces of said gauge ring and being defined by spaced annular opposed side surfaces which have been deformed axially and inwardly into engagement for substantially the full circular extent thereof with said exterior diameter portion of said gasket ring by the forming of said arcuate indentations in said gauge surfaces.

4,127,278

ELASTIC SEALING RING FOR AXLE BEARINGS OF RAIL VEHICLES

Ernst Henniges, Hannover, Fed. Rep. of Germany, assignor to Gummi-Henniges, Hannover, Fed. Rep. of Germany

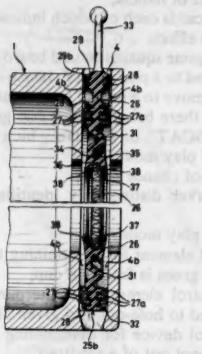
Filed Jul. 1, 1977, Ser. No: 812,393

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631357

Int. Cl.[2] F16J *15/18, 15/32*

U.S. Cl. 277—207 R **6 Claims**

1. A bearing seal for axle bearings of rail vehicles having an axle sleeve housing and a pocket in said housing having two oppositely located walls, said bearing seal comprising a sealing ring of an elastic material being insertable into said pocket, said sealing ring provided with a passage seating an axle and fitted to the diameter of said axle, said sealing ring provided with an inner ring held elastically and displaceably within an external support, said support provided with bilaterally circular sealing ribs having outer edges in the region of said inner ring, said



sealing ribs resting in an overall assembled state with said outer edges prestressed along their entire circumference against said two oppositely located walls and support ribs being provided in addition to said sealing ribs surrounding said inner ring, said support ribs being mounted bilaterally on the surfaces of said external support and following the edges of said external support.

4,127,279

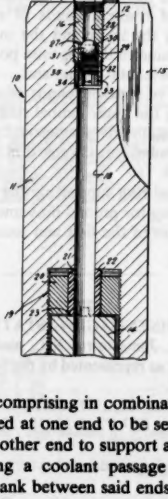
TOOL HOLDER

Wyman J. Wright, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed May 6, 1976, Ser. No. 683,667

Int. Cl.[2] B23B *51/06;* B23C *5/28*

U.S. Cl. 279—1 TS **2 Claims**



1. A tool holder comprising in combination:

(a) a shank adapted at one end to be secured to a machine tool and at the other end to support a tool;

(b) means defining a coolant passage extending entirely through said shank between said ends;

(c) an axially hollow stop screw adjustably threaded into said passage at said one end, and having a stop face outside

of said shank for determining the effective length of the tool holder;

(d) a shoulder in said shank encircling said coolant passage downstream of said stop screw and facing in the direction of coolant flow, said shoulder being defined by a threaded bore in said shank of larger diameter than said coolant passage, an annular bushing having external threads mating with said threaded bore, and a tubular bushing comprising sealing material carried within said annular bushing for endwise sealing engagement between said shank and a tool having a coolant bore therein; and

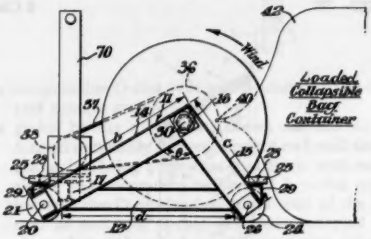
(e) a normally closed check valve disposed within said externally projecting stop screw for conducting coolant therethrough to the tool when the same is pressurized above the cracking pressure of said check valve.

4,127,280

COLLAPSIBLE BAG TYPE CONTAINER TAKE-UP REEL

Michael J. McCullough, Wilmington, Del., and Frederic T. Taraschi, Haddon Heights, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 4, 1976, Ser. No. 693,116
Int. Cl.[2] B60P *3/22*
U.S. Cl. 280—5 D 1 Claim



1. A storage reel for a collapsible bag container for transportation within a truck trailer body, said collapsible bag container having a sealed end and an opposite end provided with a valve for introducing or expelling liquid cargo into or from said bag container, comprising a rotatable spool mounted with longitudinal axis substantially horizontal and oriented generally transverse said trailer body, supported for rotation upon a movable dolly, said dolly being provided with drive means effecting, at the operators's option, either clockwise or counter-clockwise rotation of said rotatable spool, said dolly being further provided with lateral rotatable guide wheels having axes of rotation substantially vertical, said lateral guide wheels bearing on the interior side walls of said trailer body to provide guidance for balanced take-up of the associated collapsible bag container, and connection means attached to said spool engaging with companionate connection means disposed at said sealed end of said collapsible bag container.

4,127,281

BOAT ROLLER

Roy A. Ferguson, 40 School St., Suncook, N.H. 03275

Filed Aug. 29, 1977, Ser. No. 828,276
Int. Cl.[2] B63C *13/00*
U.S. Cl. 280—47.13 B 5 Claims

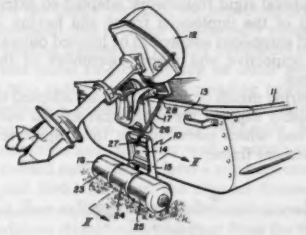
1. Boat attachment comprising:

(a) a main body adapted to be permanently attached to one end of the boat, the main bodying having an upper flange extending downwardly, and a lower flange extending downwardly,

(b) a bracket having an upper flange extending upwardly to engage beneath the main body upper flange, and a lower flange extending upwardly to engage beneath the main body lower flange,

(c) roller means rotatably mounted on the bracket, and

(d) a stretchable cord having a clip at one end for attachment to the bracket and a hook at the other end for engagement



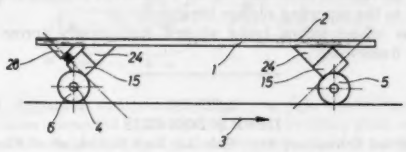
with the transom of the boat for releasably holding the bracket flanges in engagement with the corresponding main body flanges.

4,127,282

SKATE BOARD VEHICLE

Hans Görlach, Lerchenfeldstr. 14, 8950 Kaufbeuren-Neugablonz, and Heinz Nolte, 8939 Jengen, both of Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,549
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 7705511
Int. Cl.[2] A63C *17/14*
U.S. Cl. 280—87.04 A 10 Claims



1. In a skate board vehicle including a platform having front and rear wheel- and-axle assemblies, the improvement comprising a load-responsive braking assembly on said platform and including a braking portion releasably-displaceable in relation to a user's weight imposed on the platform during use of the skate board vehicle in a free-running attitude, at least one of said wheel- and-axle assemblies including at least one wheel normally, brakingly engaged by said braking portion when no user-load is imposed on said platform, so that a user's weight on the skate board vehicle releases the braking portion from braking engagement with said one wheel, said one wheel-and-axle assembly comprising bearing block means, said bearing block means slidably-supporting a slide element for movement toward-and-away from the platform, and an axle support depending from said slide element and supporting said at least one wheel upon which said skate board vehicle rides, said slide element including a portion engageable with said braking portion away from said one wheel as the slide element moves toward said platform.

4,127,283

MULTIPLE DRILL HITCH ASSEMBLY

Richard E. Baden, Spokane, Wash., assignor to Agricot Company, Inc., Spokane, Wash.

Filed Feb. 18, 1977, Ser. No. 769,905
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—411 R 4 Claims

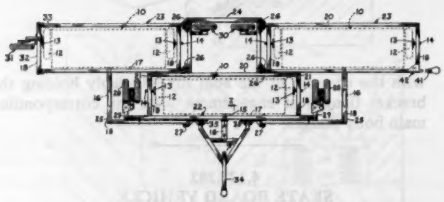
1. A hitch assembly for farm implements of the type that are transversely elongated relative to their intended direction of forward field travel and which include an implement frame

supported at its respective transverse ends by coaxial end wheel assemblies, each end wheel assembly being provided with an outwardly extended coaxial shaft;

said hitch assembly comprising:

a peripheral rigid framework adapted to extend across the front of the implement frame and having integral rearward extensions adapted to be located outwardly adjacent the respective end wheel assemblies of the implement frames;

and bearing means on said extensions adapted to receive and rotatably support the shafts that extend outwardly from the end wheel assemblies at the respective ends of the implement frame;



a first tongue hinged to the rigid framework about a transverse horizontal axis, said first tongue being movable about said transverse horizontal axis between an upright storage position and a forwardly extended field draft position;

a second tongue mounted to the rigid framework and extending transversely outward therefrom;

and retractable wheel means mounted to said framework for elevational adjustment of the framework position relative to the suporting surface beneath it;

the wheel means being aligned transversely across the framework.

4,127,284

DEVICE FOR SKIS

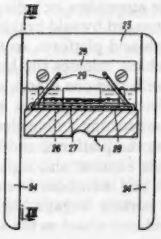
Gottfried Schweizer; Axel Kubelka; Karl Stritzl, all of Vienna, and Josef Svoboda, Schwechat, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 705,268, Jul. 14, 1976. This application Mar. 13, 1978, Ser. No. 885,517

Claims priority, application Austria, Jul. 18, 1975, 5599/75

Int. Cl.[2] A63C 7/10

U.S. Cl. 280—605 **4 Claims**



1. In a device for braking of a ski upon release of a ski boot from a binding thereof, the improvement comprising:

resilient means having an elongated and torsionable body part and at least one resilient leg inclined with respect to a longitudinal axis of said ski and with respect to a plane normal to the upper surface of said ski and containing said longitudinal axis;

holding means secured to said ski for fixedly holding said body part of said resilient means relative to said ski while simultaneously permitting a torquing of said body part and a movement of said resilient leg; and

braking means having a planar surface thereon and pivotal connection means for pivotally securing said braking means to said holding means for movement between a braking position and a retracted nonbraking position and being free of any fixed mechanical connection to said resilient means, said surface on said braking means being slidably engaged by said resilient leg, said resilient leg being also inclined toward the plane of said surface on said braking means in said braking position, said body part being torqued, when said braking means is in said retracted nonbraking position, with said resilient leg engaging said surface closer to said pivotal connection means between said braking means and said holding means than said engagement when said braking means is in said braking position and said body part untorqued, so that less force is required to hold said braking means in said retracted position than to initiate a movement of said braking means from said braking position toward said retracted position.

4,127,285

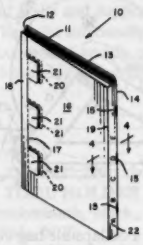
PAMPHLET WITH BACKBONE

Frank A. Leachman, Forestville, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Oct. 26, 1977, Ser. No. 845,758

Int. Cl.[2] B42D 3/00

U.S. Cl. 283—38 **8 Claims**



1. A saddle-stitched pamphlet formed to provide an indicia identifying backbone comprising a plurality of aligned sheets with said sheets being folded on a fold line, means securing the sheets together at the fold line to form a plural page pamphlet, one of the outermost cover pages being formed with a score line parallel to and adjacent the fold line, and restraining means carried by the page adjacent said one cover page and operable to engage the free edge of said one cover page whereby said one cover page is adapted to be folded on said score line to form a backbone between the score line and the fold line with the fold being maintained by the free edge of the one cover sheet engaging the restraining means.

4,127,286

CONCENTRIC PIPE COUPLING

Peter S. Albertsen, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,530

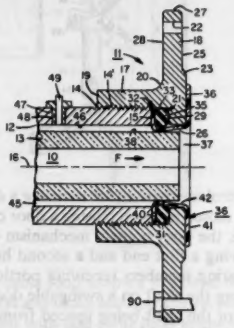
Int. Cl.[2] F16L 53/00

U.S. Cl. 285—41 **8 Claims**

1. A coupler for joining lengths of inner and outer concentric pipes, the inner pipe having an end protruding beyond an end of the outer pipe, the pipes having an annular space therebetween, the coupler comprising:

a flanged sleeve member having a rearward sleeve portion adapted to be located concentrically about and sleeved over the end of the outer one of said concentric pipes, and capable of receiving and maintaining the protruding end of the inner pipe a selected spaced distance forward of said outer pipe;

said flanged sleeve including an annular flange portion, attached to said sleeve portion extending forwardly thereof and adapted to be located forward of said outer concentric pipe end and to extend radially inward and outward of said outer pipe, said flange portion having forward and rearward annular faces, said rearward annular face having a rearward facing inner portion adapted to be spaced forward of said outer pipe end when the outer pipe is positioned within the sleeve portion for forming an inwardly facing annular groove bounded by said outer pipe end, a length of said sleeve portion and said inner rearward facing portion of said flange portion;



a compressible O-ring type seal is adapted to be disposed in said annular groove;

a gasket having a rearward sleeve end and an integrally formed outwardly flanged forward end, said sleeve end of the gasket being somewhat concentric with said flanged sleeve and adapted to be sleeved in radial compression between the O-ring and an outer wall of the inner pipe near its end, said O-ring and gasket adapted to form a circumferential seal about the inner pipe when it is received in said flanged sleeve with the flanged forward end of said gasket in mating relation with the front annular face of the flange portion.

4,127,287

PIPE JOINTS

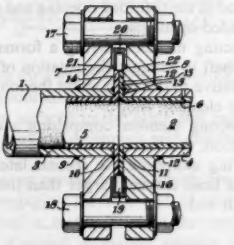
Pamela M. Davies, East Preston, England, assignor to Le Carbone (Great Britain) Limited, England

Filed Jun. 14, 1976, Ser. No. 695,761

Claims priority, application United Kingdom, Dec. 17, 1975, 51575/75; Jan. 9, 1976, 00773/76

Int. Cl.[2] F16L *59/16*

U.S. Cl. 285—55 **7 Claims**



1. In a joint between two pipe sections, each pipe section being of the type including an outer metal pipe and an inner liner of rubber or synthetic resin material, wherein metal jointing flanges are provided on the adjacent ends of the pipe section, and wherein each liner extends from the interior of its associated pipe section radially outwardly to form a liner extension covering a portion of the respective flange and terminating in a generally annular surface, the joint including means for urging the flanges towards one another so that a seal is formed between the mating faces of the two liner extensions lying between the flange portions, the improvement comprising an annular metal ring between substantially planar, parallel faces of the jointing flanges and radially outwardly of the liner extensions, said metal ring comprising an outer annular wall and at least two radially inwardly extending annular spaced apart legs defining a generally annular channel outwardly of said liner extensions, said legs being resiliently deformable relative to each other and said outer wall to permit said flanges to be urged toward each other to form a seal between said liner extensions, said metal ring and the channel formed thereby covering said liner extensions to protect said extensions from external conditions and to reduce leakage from the joint in the event of failure of the seal between the liner extensions.

4,127,288

MOVABLE CONNECTION FOR LINE SECTIONS

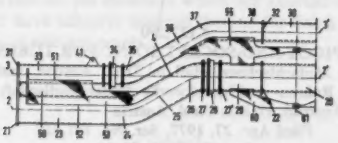
Huibert de Vries, Alblasserdam, Netherlands, assignor to Bos Kalis Westminster Group N.V., Sliedrecht, Netherlands

Filed May 3, 1977, Ser. No. 793,431

Claims priority, application Netherlands, May 5, 1976, 7604796

Int. Cl.[2] F16L *39/00*

U.S. Cl. 285—136 **8 Claims**



1. Apparatus comprising: at least one pipe line having two portions connected end-to-end by a first revolving piece which permits relative rotation of the two portions about a rotation axis which is the same as the longitudinal axis of at least one of the portions; and a pipe-line support structure extending substantially parallel to said pipe line portions and connected thereto, said support structure having two portions connected end-to-end by a second revolving piece which is longitudinally spaced from said first revolving piece, said second revolving piece permitting relative rotation of the two support structure portions about a common rotation axis that is the same as the rotation axis of the pipe line portions.

4,127,289

COUPLING FOR PIPELINES

Ronald A. Daspit, 2013 Todd Dr., Poydras, La. 70085

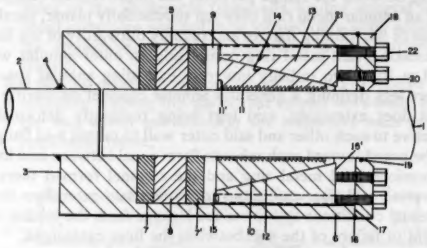
Filed May 31, 1977, Ser. No. 802,175

Int. Cl.[2] F16L *21/04*

U.S. Cl. 285—322 **4 Claims**

1. A coupling for abutting ends of pipelines of substantially the same diameters, comprising a coupling body welded to one of the pipelines, said coupling body having an end wall at which the one pipeline is welded, an aperture through said end wall, said one pipeline extending partially into said aperture, the end of the other pipeline extending into said aperture, a chamber formed between the wall of said coupling body and the other pipeline, a plurality of abutting sealing members in the chamber between the coupling body and the second mentioned pipeline, said sealing members being adjacent to the end wall of the coupling body, a metal ring bearing against the outermost sealing member, a gripping member having a serrated surface bearing against the second mentioned pipeline, one end of said gripping member bearing against the metal ring, said gripping member having an external angular surface, a compression member having an inner angular surface bearing

against the outer angular surface of the gripping member and having one end bearing against the metal ring, a plate welded to the end of the coupling body opposite the end wall and in



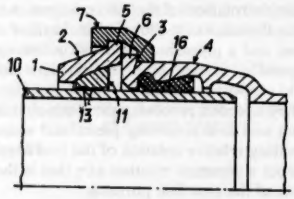
sealing engagement with the second mentioned pipeline, threaded members in threaded engagement with the plate and adapted to force the compression member against the gripping member and against the metal ring.

4,127,290

SPIGOT-AND-SOCKET JOINT FOR TUBES

Hermann Mutschlechner, Hall in Tirol, Austria, assignor to Tiroler Rohren- und Metallwerke Aktiengesellschaft Hall in Tirol (Austria), Hall in Tirol, Austria

Filed Apr. 27, 1977, Ser. No. 791,427
Int. Cl.[2] F16L *21/06*
U.S. Cl. 285—343 **9 Claims**



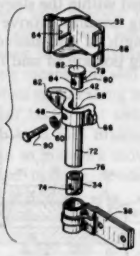
1. In a spigot and socket joint in which an end of a spigot member fits into an end of a socket member: an annular locking means removably surrounding at least a part of the circumference of said spigot member and having an outer surface facing away from said socket member; stop means secured to the circumference of said spigot member and abutting said locking means to limit axial movement of said locking means toward said socket member, said annular locking means being radially expansible and contractible so that it can be placed in engagement with said spigot member after said stop means has been secured to said spigot member; an annular part surrounding said spigot member and being axially movable relative thereto, the inner diameter of said annular part being greater than the diameter of said stop means so that said annular part can slide axially past said stop means, said annular part having a rim surrounding and engaging said outer surface of said locking means, said annular part and said socket member each having a radially outwardly extending flange; and a removable clamping collar constructed of U-shaped pieces engaging said flanges and releasably holding the same in fixed axial relationship with respect to each other.

4,127,291

DOOR FASTENING APPARATUS

Albert L. Pelcin, Aurora, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Sep. 26, 1977, Ser. No. 836,785
Int. Cl.[2] E05C *3/04*
U.S. Cl. 292—54 **5 Claims**



1. A door control mechanism for securing a door, swingable about an axis, in closed position closing a door opening defined by a door frame, the door control mechanism comprising:

(a) a shaft having a first end and a second hollow end;

(b) spaced bearing members receiving portions of the shaft for journaling the shaft on a swingable door with the axis of rotation of the shaft being spaced from and extending generally parallel to the door axis;

(c) means for rotating the shaft about its longitudinal axis;

(d) a first latch member, secured to the shaft near the first end, and having a first latch element;

(e) a second latch member having a second latch element;

(f) means connecting the second latch member to the shaft near the second end, including:

(i) a connecting member extending into the hollow end to a location lying alongside the second latch member: and,

(ii) clamping means for clamping the shaft between the second latch member and the connecting member;

(g) first and second keeper members adapted to be affixed to a door frame at locations which are adjacent the first and second latch members, respectively, when the door is in its closed position for receiving the first and second latch elements to retain the door in its closed position;

(h) the clamping means including a fastener extending transversely through the second latch member, through the shaft and into the connecting member for captivating the shaft;

(i) the second latch member having a first unthreaded opening, the shaft having a second unthreaded opening, the connecting member having a threaded opening, and the fastener including an elongate threaded element threadably received in the threaded opening and passing through the unthreaded openings;

(j) the connecting member having a formation which engages the shaft to prevent the rotation of the connecting member relative to the shaft about the longitudinal axis of the fastener element; and,

(k) the connecting member comprising a cylindrical plug extending from the terminus of the second shaft end to a location lying alongside the second latch member, and providing a head thereon larger than the opening in the second shaft end.

4,127,292

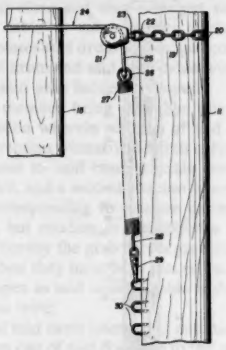
SECURING DEVICE FOR FLEXIBLE FARM GATES

William J. Mader, Box 401, Crawford, Nebr. 69339

Filed Aug. 24, 1977, Ser. No. 827,358
Int. Cl.[2] E05C *17/36*
U.S. Cl. 292—246 **5 Claims**

1. A device for securing a flexible gate having a gate bar to

a fixed gate post in a closed position, comprising a section of chain adapted to have its opposite ends anchored to the fixed gate post and at least partly surrounding the gate post near the upper end thereof, a pair of pulleys connected to said chain section near the longitudinal center thereof, a cable loop engaging said pulleys and adapted to be placed over the top of



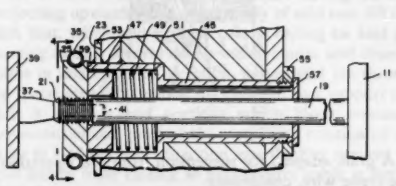
the gate bar, the cable loop adapted to extend below the elevation of said pulleys and chain section, a retractile spring having one end connected with said cable loop below the elevation of said pulleys, a clip on the other end of said spring, and anchoring means for mounting on the fixed gate post, said clip being engaged with said anchoring means.

4,127,293

PANIC LATCH FOR A GRATE

Victor Moreno, 31253 San Andreas Dr., Union City, Calif. 94587

Filed Aug. 17, 1977, Ser. No. 825,249
Int. Cl.[2] E05C *5/04*
U.S. Cl. 292—251 **12 Claims**



1. A panic latch for a grate or other covering for an opening enclosed by a structure, comprising

a male member secured to the grate and having a free end formed for projecting through said structure adjacent to the opening,

a split ring having mating halves which are formed with a means for engaging the free end of said male member when disposed in mating relation therearound, said split ring, when disposed in mating relation with said male member on the opposite side of said structure from said grate, preventing said male member from being withdrawn from its projection through said structure, and

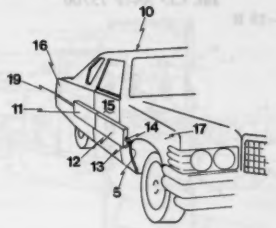
means actuatable by a person inside said structure for causing the split ring to separate and release the male member, whereby said male member may be withdrawn through said structure to permit said grate to swing open.

4,127,294

PROTECTIVE BUMPER FOR VEHICLE BODY

Charles Cooper, 2334 Somervell St., Fort Eustis, Va. 23602

Filed Dec. 10, 1975, Ser. No. 639,485
Int. Cl.[2] B60R *19/08*
U.S. Cl. 293—62 **8 Claims**



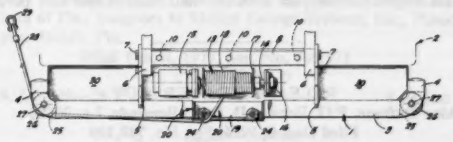
1. A removable, protective bumper for protecting the exterior of a parked vehicle, the bumper comprising a horizontally extending elongated body having a vertical width, said body being of cellular plastic material; a protective layer of a plastic material having a density greater than the density of cellular plastic material extending over at least a portion of said body; at least two suction cups fixed to said body for holding said body on a vehicle, each of said suction cups having a diameter smaller than said vertical width of said body, said suction cups being carried on pin members which are inserted into said body and have adhesive material thereon for fixing same to said body at selected points.

4,127,295

TRUCK BUMPER AND CABLE WINCH UNIT

Raymond W. Robinson, P.O. Box 104, Bieber, Calif. 96009

Filed Aug. 11, 1977, Ser. No. 823,664
Int. Cl.[2] B61F *19/04*
U.S. Cl. 293—69 R **2 Claims**



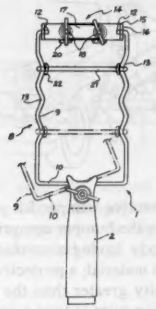
1. A bumper and cable winch unit comprising a horizontal bumper adapted to extend transversely in spaced relation ahead of the frame of a truck, means to rigidly secure the bumper to the front end of the truck frame, a support fixed in the zone between the bumper and the front end of the truck frame, a power-driven cable winch disposed in such zone and mounted on the support, the winch including a drum having a cable wound thereon, the bumper having an opening therethrough directly ahead of the drum, the cable upon unwinding from the drum passing through the opening and extending therefrom as a working reach, transversely spaced cable guide means mounted in such opening and adapted for engagement, in direction-changing relation, by the cable passing through said opening, the cable guide means being positioned to permit the working reach of the cable to run laterally, in one direction or the other, from such guide means to a corresponding end of the bumper, and vertical-axis sheaves journaled on the ends of the bumper and each sheave being positioned to receive said laterally-running working reach of the cable and turn such reach to run rearwardly, from said corresponding end of the bumper, alongside the truck.

4,127,296

HOLDER FOR AN IMPLEMENT

John D. Thomson, 73 Wallaroy Rd., Woollahra, Sydney, Australia

Filed Nov. 8, 1977, Ser. No. 850,090
Claims priority, application Australia, Nov. 16, 1976, 8159/76
Int. Cl.[2] A47F *13/06*
U.S. Cl. 294—19 R **7 Claims**



1. A holder for an implement, said holder comprising a body, a handle, coupling means on said body to receive said handle, an elongated implement support part of said body, a pair of co-axial pivot pins respectively located on each of two elongated spaced and aligned parts of said implement support to pivotally support an implement, resilient means connecting said two spaced aligned parts and engaging a portion of an implement when pivotally mounted therebetween and resiliently restrain pivotal movement of said implement, a pivotal clamping connection between the handle and said implement support with its axis of pivoting at right angles to the axis of pivoting of said implement relative to the implement support, said resilient means comprising an elastic band extending around said implement support, correspondingly positioned restraining means in said spaced aligned parts to allow positioning of said band at one of several possible locations along said implement support between said handle and said pivot pins.

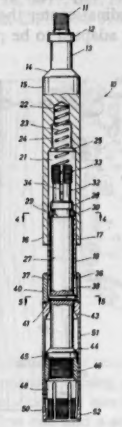
4,127,297

RELEASABLE OVERSHOT

Alex Dufrene, P.O. Drawer D, Des Allemands, La. 70030

Filed Dec. 6, 1976, Ser. No. 748,109
Int. Cl.[2] E21B *31/00*
U.S. Cl. 294—86.2 **5 Claims**

1. An overshot comprising
(a) an elongate body having an extended circular skirt affixed to one end thereof;
(b) a grapple formed of multiple fingers inside said skirt and having a set of serrations for grasping a fish which fingers deflect inwardly and outwardly dependent on their relative longitudinal position adjacent to said skirt;
(c) a movable mandrel attached to said grapple axially received within said body;
(d) resilient force means coacting with said mandrel and said body to force said grapple into a fish engaging position relative to said skirt;
(e) means for releasably locking said grapple in a fish releasing position relative to said skirt;
(f) a shear pin joining said body and said mandrel together;
(g) inertial upset locking means which comprises an internally threaded opening in said body and a ratchet means attached to the upper end of said mandrel aligned with and remote from said threaded opening which is held in the separated position by said resilient force means and which ratchet means comprises a set of fingers spaced in a circle which collectively have serrations on the exterior thereof, and said fingers deflect radially, and wherein the opening of said body is adjacent to a funnel-shaped shoulder to guide said fingers into said opening; and



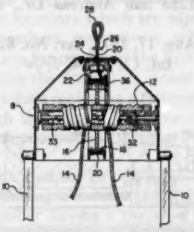
(h) first and second slots formed in said skirt above a thickened lower end to deflect said grapple, said slots receiving the ends of said shear pin which passes through said mandrel to freely permit a limited range of axial movement by said mandrel.

4,127,298

CRANE GRAB

Poul V. Egholm, Egå, Denmark, assignor to Knud W. Petersen, Portland, Oreg.

Filed Jan. 31, 1977, Ser. No. 763,903
Int. Cl.[2] B66C *1/10*
U.S. Cl. 294—111 **2 Claims**



1. A grab, adapted for suspension from and operation by a single crane wire, comprising:
a housing suspendable from a crane wire;
at least two levers pivotally secured at one end to and depending from said housing;
two opposed grab halves each pivotally secured one to each of said levers to the other end thereof;
a grab shaft on which each of said halves is journaled;
a rotatable drum mounted on said housing parallel with said grab shaft;
a control cable one end of which is secured to and windable around said drum and the other end of which is adapted for connection to said crane wire;
a grab cable one end of which is connected to and windable around said drum and the other end of which is secured to said grab shaft;
a spring operably connected between said drum and said housing which tends to rotate said drum so as to wind up said control cable;

a pawl member pivotally mounted at one end to said housing and having a plurality of protruding cams; and

a pin operably connected to said drum and positionable to engage said cams, but not the main body of said pawl,

said cables being arranged such that when said control cable is hoisted it winds off the drum, said spring tightens, and said grab cable winds onto said drum causing said grab halves to close and also arranged such that when said control cable is subsequently slacked, said tightened spring rotates said drum so that said control cable rewinds onto said drum and said grab cable winds off of said drum causing said grab halves to reopen,

said pawl member being movable, alternately, between a first position wherein rotation of said drum is allowed in either direction whereby the grab halves close for digging in response to said control cable being hoisted by said crane wire, and a second position wherein rotation of said drum corresponding to rotation driven by said spring is allowed, but rotation in the opposite direction is not allowed whereby the grab halves are allowed to open themselves when they have been placed on a solid surface and remain open as said control cable is thereafter hoisted by said crane wire;

said pin and said cams interacting automatically to shift said pawl from one of said positions to the other whenever said grab halves are deposited on a solid surface and said control cable is slackened, such that when said grab halves are so deposited while closed, subsequent hoisting of said crane wire causes said grab halves to open and such that when said grab halves are so deposited while open, subsequent hoisting of said crane wire causes said grab halves to close;

two of said cams comprising front and rear lift cams positioned in the path of said pin such that when said grab halves are deposited on a solid surface while closed, the resultant slackening of said control cable allows rotation of said drum corresponding to rotation driven by said spring which rotation brings said pin into contact with said lift cams and causes said pawl to be raised to said second position;

another of said cams comprising a rear support cam spaced from said rear lift cam sufficiently to leave a space for said pin to pass therebetween, said support cam being located such that when said control cable is fully slacked, said support cam rests on said pin;

another of said cams comprising a cam having portions projecting upwardly and overlyingly of said rear lift cam such that, when said support cam is resting on said pin, hoisting of said control cable, which causes said drum to rotate in said opposite direction, moves said pin through the space between the rear lift cam and rear support cam until it engages said portions which block continued movement of said pin and thus terminate rotation of said drum in said opposite direction and thereby prevent the grab halves from closing as said control cable is further hoisted;

said support cam being spaced from said portions sufficiently to define a passage through which said pin can pass such that when said pin engages said portions, slacking of said control cable allows rotation of said drum corresponding to rotation driven by said spring which rotation causes said pin to move through said passageway to a position above said support cam thus allowing said pawl to fall into said first position;

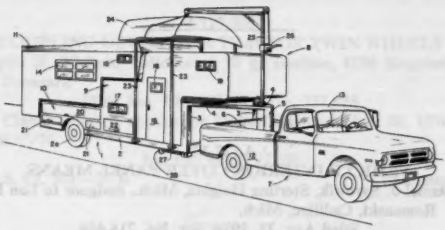
said cams being shaped and positioned such that when said pawl is in said first position, hoisting of the control cable, which causes said drum to rotate in said opposite direction, moves said pin over said portions and then beneath said front lift cam which is hinged to open for allowing passage of said pin therebeneath when struck on its upper surface by said pin so that said drum is not prevented from rotating in said opposite direction and thereby said grab halves are closed as said cable is hoisted.

4,127,299

EXPANDING CAMPER ARRANGEMENT

Calvin B. Blair, P.O. Box 97, Barnard, Kans. 67418

Filed Jun. 9, 1976, Ser. No. 694,197
Int. Cl.[2] B60P *3/32*
U.S. Cl. 296—23 MC **11 Claims**



1. A modular camper body comprising:

(a) a forward compartment having a floor, boundary walls and a ceiling which enclose living space for activity by a camping person residing in an upright position on said floor;

(b) second and third compartments which extend rearwardly from said forward compartment and lie to either side of an unenclosed median space;

(c) said modular camper body being adapted to engage with an overlying camper body in a fitted relationship with at least a portion of said forward compartment of said modular camping body residing forwardly of said overlying camper body; and

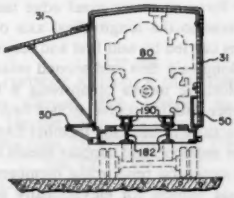
(d) said overlying camper body includes a front recess and side recesses, and a portion of said forward compartment is adapted to fit into said front recess and said second and third compartments are adapted to fit into said side recesses.

4,127,300

TRANSITION PIECE FOR POWER PLANT IN MOBILE ELECTRIC POWER GENERATING SYSTEMS

Joseph F. Melley, Davie, and Richard K. Fischer, Bradenton, both of Fla., assignors to Melley Energy Systems, Inc., Pompano Beach, Fla.

Filed Feb. 4, 1977, Ser. No. 765,671
Int. Cl.[2] B62D *1/20*
U.S. Cl. 296—28 R **4 Claims**



1. In a mobile electric power generating system comprising a power plant and a trailer bed subject to twisting forces during movement thereof, said trailer bed including at least one main rail having a horizontal top plate, means for mounting said power plant to said trailer comprising:

a transition piece having a top flange adapted to be fastened to the base of said power plant, a bottom flange, and intermediate plate means disposed between said top flange and said bottom flanged arranged to absorb at least some of said twisting forces; and

clamp means, including a top section having a first portion disposed above said bottom flange; a separate bottom section disposed below said top plate; and means for urging said first portion of said top section and said bot-

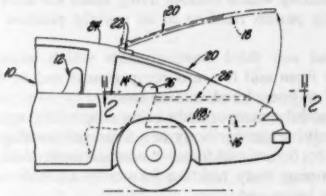
tom section toward each other without impairing the integrity of said main rail to secure said transition piece thereto.

4,127,301

VEHICLE INTERIOR COVER PANEL MEANS

Daniel J. Syrowik, Sterling Heights, Mich., assignor to Lon H. Romanski, Cadillac, Mich.

Filed Aug. 23, 1976, Ser. No. 716,464
Int. Cl.[2] B60R 5/04
U.S. Cl. 296—37.16 10 Claims



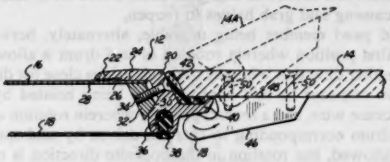
8. A foldable cover panel apparatus for use within the passenger compartment of an automotive vehicle, said apparatus comprising a first rigid panel member, a second rigid panel member, first and second inner edges respectively formed on said first and second panel members, hinge means operatively interconnecting said first and second panel members as to cause said first and second inner edges when said first and second panel members are in an unfolded condition to assume a juxtaposed condition with respect to each other, said first and second panel members further respectively comprising a first relatively forward edge situated generally transverse to said first inner edge and a second relatively forward edge situated generally transverse to said second inner edge, said first and second relatively forward edges cooperating when said first and second panel members are in an unfolded condition to define relatively forward cover panel edge means extending generally transverse to the longitudinal axis of said vehicle, reinforcing means carried by said first and second panel members generally along said first and second relatively forward edges, said reinforcing means comprising a first structural reinforcing member fixedly secured to said first panel member and a second structural reinforcing member fixedly secured to said second panel member, and support means carried by said first and second structural reinforcing members for operative connection to said vehicle for elevationally supporting said first and second panel members in an unfolded condition and in a generally horizontal position within said vehicle, said support means comprising a plurality of pin-like supports fixedly secured to said first and second structural reinforcing members as to extend therefrom, at least two of said plurality of pin-like supports being fixedly secured to one of said structural reinforcing members and at least one of said plurality of pin-like supports being fixedly secured to the other of said structural reinforcing members, said plurality of pin-like supports being so positioned on said first and second structural reinforcing members as to be generally horizontally disposed when said first and second panel members are in an unfolded condition and operatively connected through said pin-like supports to said vehicle.

4,127,302

ROOF MOLDING DETACHABLE SUN ROOF PANEL FOR AUTOMOBILES

Hal Green, Southfield, Mich., assignor to Empire Automotive, Inc., Roseville, Mich.

Continuation of Ser. No. 580,989, May 27, 1975, abandoned, which is a division of Ser. No. 444,274, Feb. 21, 1974, Pat. No. 3,913,971. This application Oct. 21, 1976, Ser. No. 734,647
Int. Cl.[2] B60J 7/00
U.S. Cl. 296—137 B 4 Claims



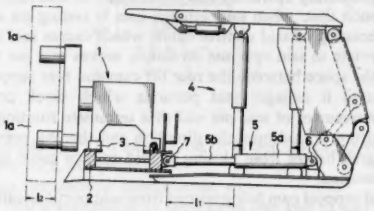
1. A molding for use in framing the perimeter of an aperture formed in a sheet vehicle roof to adapt said aperture for the reception of a removable sun panel, said molding comprising: a first planar section adapted to overlay the top of the roof adjacent to the perimeter of the aperture; a second section having a surface extending downwardly and away from the aperture at an inclined angle relative to the roof; wedge-shaped retaining members adapted to be inserted between said first and second sections to clamp the roof between the first section and the wedge members; a third section extending below the roof and away from the edge of the roof toward the center of the aperture; and a resilient sealing member supported on said third section facing the exterior of the vehicle.

4,127,303

COAL MINING METHOD AT A LONG-WALLED PIT FACE OF THE COAL MINE

Shigeo Nakajima, Tokyo, and Hajime Endo, Kushiro, both of Japan, assignors to Taiheiyo Engineering Incorporated, Tokyo, Japan

Filed Feb. 2, 1977, Ser. No. 764,792
Claims priority, application Japan, Aug. 31, 1976, 51-103977
Int. Cl.[2] E21C 41/00, 35/14
U.S. Cl. 299—11 3 Claims



1. A coal mining method used at a long-walled pit face of a coal mine and utilizing a shearer having at least one drum rotatable about an axis disposed generally perpendicular to the pit face and further utilizing self-advancing supports comprising:

reciprocating the shearer from a first position on one side of the pit face to another side of the pit face in one direction parallel to the pit face as the shearing drum shears the pit face;

maintaining the self-advancing supports in a first location as the shearer is reciprocated in said one direction;

stopping the shearer at a second position upon reaching the end of the reciprocating stroke at said other side of said pit face;

advancing said shearer perpendicular to the pit face while the shearer is at said second position, said advancing being effected by a shifter operably connected between said shearer and said self-advancing support;

maintaining said self-advancing supports at said first location while effecting said last step of advancing said shearer perpendicularly to the pit face such that the shearer moves further away from the self-advancing support;

reciprocating the shearer from said second position on the other side of said pit face to said first position on said one side of said pit face in an opposite direction parallel to the pit face as the shearer drum shears the pit face;

advancing said self-advancing supports from said first location toward said pit face to a second location, said latter advancing step being effected on the self-advancing supports disposed between said reciprocating shearer and said second position on said other side of said pit face such that said self-advancing supports are advanced at locations downstream of said reciprocating shearer as the latter moves toward said first position;

stopping the shearer at said first position upon reaching the end of the reciprocating stroke at said one side of said pit face;

advancing said shearer perpendicular to the pit face while the shearer is in said first position, said latter advancing step being effected by said shifter;

maintaining said self-advancing supports at said second location while effecting said last step of advancing said shearer perpendicularly to the pit face such that the shearer moves further away from the self-advancing support; and

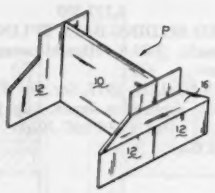
repeating the aforementioned steps in the sequence set forth such that the self-advancing supports are advanced upon every two complete reciprocating strokes of said shearer.

4,127,304

SELF ERECTING PARTITION

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 16, 1978, Ser. No. 869,422
Int. Cl.² B65D *5/48*
U.S. Cl. 229—15 **1 Claim**



1. A self-erecting internal partition structure comprising:

(a) a pair of vertically disposed center panels positioned in face-to-face relation and having upper edges foldably joined to each other about a horizontal hinge line;

(b) a pair of vertical end panels at each end of said center panels;

(c) said end panels of each pair being free from direct attachment to each other but being aligned with each other in a common vertical plane extending normal to said center panels, and each end panel having an inboard edge foldably joined to an adjacent end edge of a related center panel;

(d) a relatively narrow connecting panel positioned at each end of said partition and extending across outer faces of both adjacent end panels;

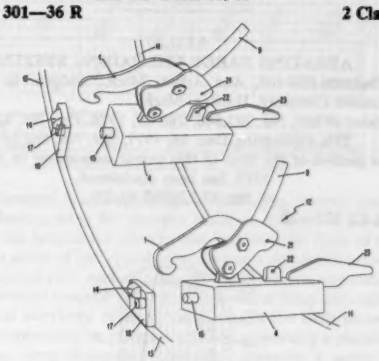
(e) each of said connecting panels being foldably joined at opposite ends to outboard edges of respective end panels along diverging fold lines and being disposed to lie against outer faces of said end panels to provide additional rigidity for said partition structure, to cause said end panels to automatically move to erected position when said center panels are folded in face-to-face relation, and to prevent said center and adjacent end panels from moving away from each other about said hinge line.

4,127,305

COUPLING DEVICE FOR TRACTOR TWIN WHEELS

Kjeld R. Nielsen, Tofteaasvej 10 g, Benløse, 4100 Ringsted, Denmark

Filed Jan. 10, 1977, Ser. No. 757,855
Claims priority, application United Kingdom, Jan. 10, 1976, 00937/76
Int. Cl.² B60B *11/00*
U.S. Cl. 301—36 R **2 Claims**



1. A coupling device operable to couple two tractor wheels, comprising:

a wheel rim carrying a plurality of circumferentially spaced knee lever mechanisms each comprising a maneuvering bar and a hook;

a second wheel rim carrying a plurality of circumferentially spaced projections each operable to laterally engage with a respective one of said hooks;

a plurality of circumferentially spaced, laterally facing holes associated with one of said rims; and

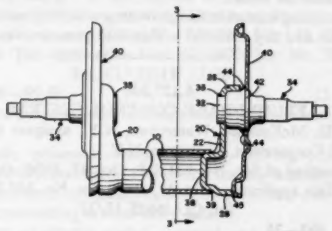
a plurality of circumferentially spaced, laterally extending pins carried by the other of said rims, which also carries said knee lever mechanisms, each operable to receive one of said pins.

4,127,306

OFFSET SPINDLE SUPPORT

Alan D. Foster, Adrian, Mich., assignor to Dayton-Walther Corporation, Dayton, Ohio

Filed May 23, 1977, Ser. No. 799,583
Int. Cl.² B60B *35/06*
U.S. Cl. 301—127 **4 Claims**



1. An adapter arrangement for supporting a wheel spindle in

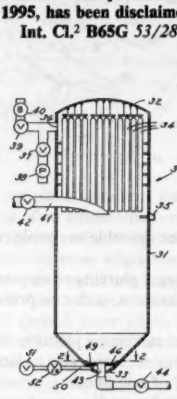
transversely offset relation to an axle, comprising a vertically elongated stamped metal support bracket, said support bracket having a back wall and a pair of spaced-apart side walls, means in said back wall adjacent the top thereof defining a stub spindle-receiving opening, a wheel spindle having a rearward portion extending through said opening and secured to said back wall at said opening, said back wall further defining an axle-receiving portion adjacent the bottom thereof, means securing said axle-receiving portion on the end of said axle, a brake backing plate mounted on said spindle and joined thereto, said bracket side walls being in abutment with the adjacent surface of said backing plate throughout a substantial portion of the longitudinal lengths of said side walls, and means welding said bracket side walls to said backing plate thereby forming with said backing plate an offset spindle support.

4,127,307

AERATING BARGE UNLOADING SYSTEM

Ib Bentzen-Bilkvist, Ann Arbor, Mich., assignor to Dundee Cement Company, Dundee, Mich.

Division of Ser. No. 709,846, Jul. 29, 1976, Pat. No. 4,085,975.
This application Dec. 16, 1977, Ser. No. 861,154
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[2] B65G *53/28*
U.S. Cl. 302—23 **4 Claims**



1. In a system for unloading dry bulk particulate material by vacuum from a barge or the like into a pressure vessel at a first entrance port and then by emptying said material by positive fluid pressure from the pressure vessel into a storage container such as a silo, the improvement comprising:

means for aerating said dry material in said vessel simultaneously with the introduction of said dry material into said pressure vessel;

said aerating means including a second entrance port and check valve at said second entrance port which check valve opens to ambient air for bleeding the ambient air directly into the pressure vessel only when the vacuum inside the vessel is lower than the ambient air pressure outside the vessel;

said aerating means is for providing a homogenous mixture of air and dry material within said pressure vessel.

4,127,308

FLUID BRAKE CONTROL SYSTEM

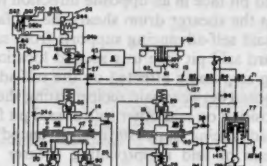
Eugene D. McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 731,618, Oct. 13, 1976, abandoned.
This application Oct. 17, 1977, Ser. No. 842,761
Int. Cl.[2] B60T *15/22*
U.S. Cl. 303—35 **51 Claims**

30. A fluid brake control system for governing application and release of brakes of an interchange vehicle having a brake control pipe, an auxiliary reservoir, an emergency reservoir, a fluid brake cylinder, and a brake control device for sensing changes in fluid pressure in the brake pipe for at times governing application of fluid to the brake cylinder from the auxiliary reservoir and emergency reservoir and at other times for releasing fluid from the brake cylinder, wherein improvements in the brake control device comprise:

(a) a universal control valve device,

(b) means for adapting the universal control valve device to either of two alternative modes of operation,



(c) the adapting means in a first state governing operation of the brake cylinder to a braking pressure determined by the relative fluid pressures in the auxiliary reservoir and in the brake cylinder,

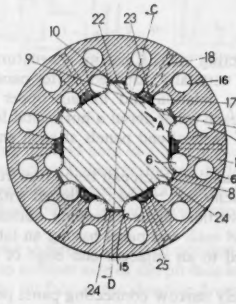
(d) the adapting means in a second state operating the brake cylinder to a braking pressure determined by the relative fluid pressures in two volume chambers having volumes substantially less than and proportional to those of the auxiliary reservoir and brake cylinder displacement volumes respectively.

4,127,309

UNLIMITED SLIDING BALL SPLINE ASSEMBLY

Hiroshi Teramachi, 2-34-8, Higashi-tamagawa, Setagaya-ku, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,286
Claims priority, application Japan, Aug. 18, 1976, 51-097775
Int. Cl.[2] F16C *29/06*
U.S. Cl. 308—6 C **7 Claims**



1. A sliding ball spline assembly comprising a cylindrical outer sleeve and a shaft extending through said sleeve, and means for coupling said sleeve to said shaft for relative rectilinear movement in an axial direction and in rotational torque

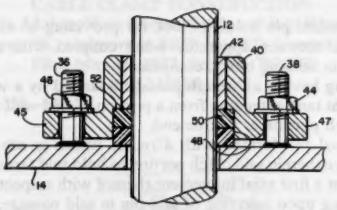
transmitting relationship, said coupling means including a plurality of circumferentially spaced apart longitudinally extending sleeve grooves formed along the inner circumferential surface of said sleeve, each of said sleeve grooves having a bearing surface, a return passage formed in said sleeve corresponding in number to the number of said sleeve grooves, said return passages being radially spaced from its respective corresponding sleeve groove, a pair of end members connected to the opposed ends of said sleeve, each of said end members having end grooves for connecting the corresponding sleeve grooves and return passages into communication to define an endless raceway, said shaft having a plurality of longitudinally extending shaft grooves formed in the outer surface thereof, the number of shaft grooves being equal to one half the number of sleeve grooves, said shaft grooves each having a pair of opposed bearing surfaces, a rib defined in the space between adjacent shaft grooves, said opposed bearing surfaces being curved transversely to complement the bearing surfaces of opposite adjacent pairs of said sleeve grooves, said sleeve having a projection extending into a shaft groove between the opposed bearing surfaces of said shaft groove, a plurality of ball bearings disposed in each of said endless raceways, said bearing surfaces of said sleeve grooves and shaft grooves conforming to the circumference of said ball bearings, a ball retainer extending into each of said shaft grooves, said ball retainer being disposed between the opposed bearing surfaces of said respective shaft grooves, said ball retainer having opposed side walls for positively retaining the ball bearing in adjacent pairs of sleeve grooves within their respective grooves.

4,127,310

SHAFT BEARING AND SEAL WITH SELF-LUBRICATING SLEEVE BEARING

Otto V. Werner, Poughkeepsie, N.Y., assignor to Ecolaire Incorporated, Malvern, Pa.

Filed Sep. 6, 1977, Ser. No. 830,548
Int. Cl.[2] F16C *33/72*
U.S. Cl. 308—36.1 **7 Claims**



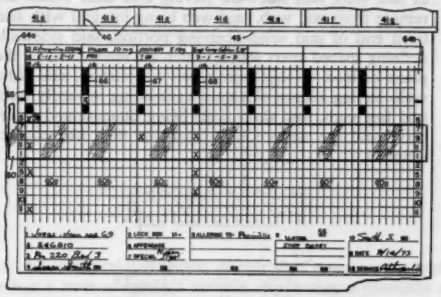
1. A bearing and seal for a movable shaft adapted to extend through an opening in a stationary frame comprising an annular housing member having a bearing force-fit along the portion of its inner periphery, said housing member having a counterbore whose diameter is greater than the outer diameter of the bearing, said counterbore being at one end of said housing member and defining a shoulder on the housing member radially outwardly from an end face of the bearing, an annular packing seal means in said counterbore, the thickness of said packing seal means in an axial direction being greater than the depth of said counterbore, one side face of the packing seal means being in contact with said shoulder and in contact with said end face of the bearing, the opposite side face of said packing seal means being beyond said one end of said housing member, and adjustable means for applying pressure to the housing member for deforming said packing seal means in an axial direction against said stationary frame.

4,127,311

DRUG DELIVERY METHOD AND APPARATUS

William Weiman, 260 30th Ave., San Francisco, Calif. 94121

Division of Ser. No. 456,590, Apr. 1, 1974, Pat. No. 3,915,526.
This application May 27, 1975, Ser. No. 580,633
The portion of the term of this patent subsequent to Oct. 28, 1992, has been disclaimed.
Int. Cl.[2] B01L *9/02*
U.S. Cl. 312—209 **5 Claims**



5. In a hospital drug dispensing cart including discrete medicine dispensing trays for discrete patients, said chart having means on the bottom for moving said cart over the floor of the hospital; a series of individual compartments defined interiorly of said hospital cart, each of said compartments corresponding to an individual hospital patient; an individual drug dispensing tray placed interiorly of each compartment for each patient, said tray comprising an elongate tray for supporting a plurality of discrete drug dispensing containers thereon; a series of partitions extending across said elongate tray to delimit the length of said tray into a series of discrete drug bins for receiving discrete drugs in each bin; a chart suitable as a permanent medicine record for each said drug dispensing tray; means for attaching said charts to each of said drug storage trays with a portion of said chart juxtaposed to each said drug storage bin; discrete columns on said chart having column margins extending from each discrete bin proximate the partitions delimiting each bin to define columns on each said chart between said margins having widths substantially equal to the widths of each discrete storage bin at the point of juxtaposition of said chart; and indicia on said chart at each discrete column identifying each drug in each discrete drug storage bin as to identity and time of daily drug administration, the indicia in each discrete column being at differing distances from said drug bins and that which relates to a corresponding time of daily drug administration being at a corresponding distance from each drug storage bin.

4,127,312

MODULAR CONNECTOR FOR CONNECTING GROUPS OF WIRES

James E. Fleischhacker, Winston-Salem, N.C.; Henry G. Wasserlein, Jr., Seminole, Fla., and James A. Kloth, deceased, late of St. Petersburg, Fla. (by Marion L. Kloth, administrator), assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 630,589, Nov. 10, 1975, abandoned. This application Mar. 31, 1977, Ser. No. 783,127
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **12 Claims**

1. A multi-purpose, multi-contact electrical connector comprising:

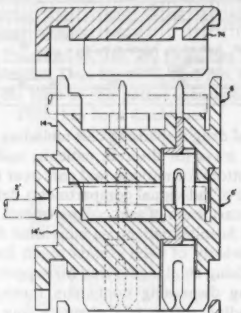
a generally prismatic insulating body having oppositely directed first and second faces and having laterally facing sides and ends extending between said faces, one of said sides constituting a wire-entry side,

a plurality of double ended stamped and formed contact terminals mounted in, and extending through, said body, each of said terminals having a wire-receiving portion and

a receptacle portion, said wire-receiving portions extending from said first face and said receptacle portions being on said second face,

said wire-receiving portion of each terminal comprising a single plate-like member having a fixed end and a free end, a wire-receiving slot extending inwardly from said free end towards said fixed end,

said receptacle portion being generally U-shaped and comprising a web and sidewalls extending from opposite edges of said web, said sidewalls having free ends which are remote from said web, said web being integral with said fixed end of said wire-receiving portion, said sidewalls defining spaced-apart planes which are intersected by the plane defined by said wire-receiving portion, said sidewalls having aligned slot means extending inwardly from said free ends, said slot means being dimensioned to receive said the wire-receiving portion of a like contact terminal,



said terminals being arranged in two parallel rows with the terminals in one row being offset from the terminals in the other row,

barrier walls extending across said second face and between said sides, each of said receptacle portions being between adjacent barrier walls,

first and second rows of wire-receiving notch means in said wire-entry side, said first and second rows of notch means being beside said first and second faces respectively, said rows being offset from each other to permit mating of said body at either of said faces with another insulating body having a complementary face whereby,

upon installing said connector upon a plurality of wires with said wires extending through said first row of notch means and with said wires in said wire-receiving slots of said terminals, said connector can be mated at either face with a connector having a complementary face.

4,127,313

HIGH VOLTAGE ELECTRON TUBE BASE WITH DRIP RELIEF MEANS

Bruce G. Marks, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

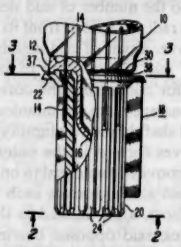
Filed May 18, 1977, Ser. No. 798,125
Int. Cl.[2] H01R *33/76*
U.S. Cl. 339—144 T **8 Claims**

1. A base member adapted to be disposed over a circular array of lead conductors and an exhaust tubulation of an electron tube stem having a peripheral glass protuberance, said base member comprising:

a. a tubular housing having an open end for receiving said exhaust tubulation therein,

b. a flange having a diameter at least as large as the diameter of said stem extending outwardly from said housing at said open end thereof,

c. an array of apertures through said flange for receiving said array of lead conductors therethrough, and



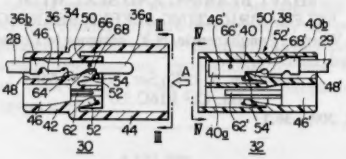
d. drip relief means comprising a part of said flange including a stem-contacting surface which is outwardly of said circular array and inwardly of the periphery of said flange and of said peripheral protuberance to allow non-tilted mounting of said base on said stem.

4,127,314

TERMINAL PIN HOLDING BLOCK

Susumu Hasimoto, Omiya, Japan, assignor to Nissan Motor Company, Limited, Yokohama and Kanto Seiki Company, Limited, Omiya, both of, Japan

Filed Jun. 27, 1977, Ser. No. 810,680
Claims priority, application Japan, Jun. 30, 1976, 51-86448[U]
Int. Cl.[2] H01R *9/16, 13/42*
U.S. Cl. 339—59 M **9 Claims**



1. A terminal pin holding block for providing an electrical connection between apparatus when coupled with another terminal pin holding block, comprising:

a housing having a through passage bounded by a wall;

a resilient tang extending from a portion of said wall to form a catch portion at its free end;

a terminal pin formed with a recess which is adapted to receive therein said catch portion to hold said terminal pin against a first axial movement thereof with respect to said housing upon insertion of said pin in said passage;

means for holding said pin against a second axial movement of the same upon insertion of said pin in said passage, said second axial movement being opposite to said first axial movement;

said catch portion of said resilient tang including first and second projecting sections which are separated by a recessed portion, said first projecting section extending toward said recess of said terminal pin and engageable with the same, and said second projecting section extending substantially parallel with the axis of said pin supporting an outer surface of said pin with a flat surface thereof when said pin is depressed toward said second projecting section; and

a predetermined amount of gap being formed between said flat surface of said second projecting section and said outer surface of said pin upon holding engagement of said catch portion with said recess for thereby allowing said pin to swing by a predetermined amount in said passage,

the assembling of said pin with said housing being such that

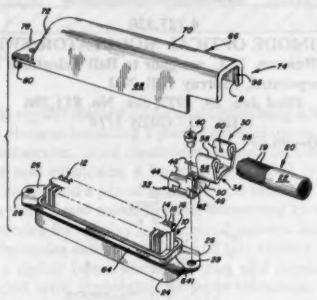
said pin is permitted to play swingably by a predetermined amount in said passage even when said pin is held against said first and second axial movement.

4,127,315

CABLE CLAMP AND HOOD CONSTRUCTIONS FOR USE WITH RIBBON CONNECTORS

William H. McKee, West Covina, Calif., assignor to TRW Inc., Elk Grove Village, Ill.

Filed May 16, 1977, Ser. No. 797,587
Int. Cl.[2] H01R 13/58
U.S. Cl. 339—103 B 47 Claims



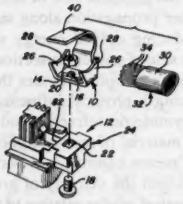
1. A cable clamp for use with an electrical connector including an anchor portion adapted to be fixedly mounted on a connector, and a cable clamp portion comprising opposed clamping elements for securely engaging a cable therebetween; each of said elements being deformable toward the other to effect gripping and retention of such cable disposed therebetween, said clamping elements being substantially nonresilient and of sufficient strength to prevent movement of a clampingly engaged cable relative thereto without the need for discrete securing means.

4,127,316

CABLE CLAMP CONSTRUCTION

William H. McKee, West Covina, Calif., and Roy Witte, Rolling Meadows, Ill., assignors to TRW Inc., Elk Grove Village, Ill.

Filed May 16, 1977, Ser. No. 797,588
Int. Cl.[2] H01R 13/58
U.S. Cl. 339—103 R 14 Claims



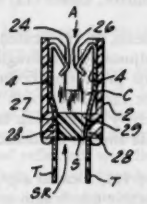
1. A cable clamp for an electrical connector adapted to terminate conductors of such cable therein, said clamp being separate from the connector and comprising a base for mounting said clamp on a portion of such connector; deformable clamp means joined to said base for being formed against a cable outer periphery and clampingly engaging a peripheral portion of such cable to be clamped and retaining such engaged cable portion in relatively immovable relation relative thereto; said deformable clamp means being substantially nonresilient and of sufficient strength to prevent movement of an engaged cable relative thereto in the absence of discrete securing means.

4,127,317

ELECTRICAL CONNECTORS WHICH MAY BE SHORTENED TO PROVIDE FEWER CONTACTS

Christopher W. Tyree, Darling Point, Australia, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Jun. 29, 1977, Ser. No. 811,021
Claims priority, application Australia, Jul. 6, 1976, 15637/76
Int. Cl.[2] H01R 13/42; H05K 1/07
U.S. Cl. 339—134 4 Claims



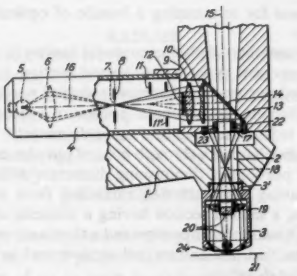
1. An electrical connector, comprising: a supportive body having a row of contact cavities supporting a plurality of contact elements; retaining means positioned along said row for use in retaining contact elements in said row; additional retaining means for use in locking contact elements in said row; receptacle means disposed along said row for cooperatively receiving said additional retaining means and enabling contact elements to be locked in the body, the receptacle means also including a slot arranged parallel to said row to permit motion of a part of said additional retaining means along an axis parallel to said row, said slot forming extensions of said contact cavities; the additional retaining means including a slide longitudinally movable in said slot for securing the contact elements in the cavities against transverse motion, and a mounting foot adaptable to fit into the slot in a direction transverse to the slot, the foot having a tooth adaptable to fit into a contact cavity to prevent displacement of the foot and the slide along the slot, and to retain a contact element positioned within the cavity.

4,127,318

DIRECT ILLUMINATION APPARATUS FOR LIGHT AND DARK FIELD ILLUMINATION

Hans Determann, Nauborn; Günter Reinheimer, Biebertal, and Hans W. Stankewitz, Steindorf, all of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Sep. 20, 1976, Ser. No. 724,854
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2542075
Int. Cl.[2] G02B 21/14
U.S. Cl. 350—91 17 Claims



1. In a direct illumination apparatus for microscopes having a microscope objective (3) with a threaded portion (3') and a light source (5) for generating light field, phase contrast, inter-

ference contrast and dark field illumination along an optical axis comprising:

(a) deflecting mirror means located along said optical axis and having a center region which is partly specular and an annular zone which is fully specular;

(b) an annular condensor (19) located along said optical axis and within said objective (3);

(c) an adjustable diaphragm (8) located at an aperture stop plane along said optical axis between said light source and said deflecting mirror, means (12) for suppressing a light field beam;

(d) optical components, (9, 10) located along said optical axis between said adjustable diaphragm and said deflecting mirror means for projecting collimated light onto said deflecting mirror means for both bright and dark field illumination, thereby illuminating an objective plane for a light field and said annular condensor with light for a dark field; and

(e) an aperture stop (11) located along said optical axis between said adjustable diaphragm and said optical components in the path of said dark field beam; the improvement comprising:

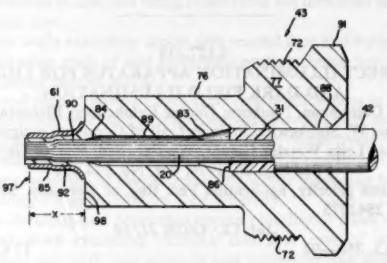
(f) an annular lens (17) mounted along said optical axis and concentrically therewith between said deflecting mirror means and said condensor in the dark field beam after deflection by said fully specular annular zone, said annular lens (17) having a refractivity for imaging said aperture stop plane within the cross section of the bright field beam in a plane (18) located near said threaded portion and in front thereof in the direction of light travel.

4,127,319

TERMINATION MEANS FOR FIBER OPTIC BUNDLE

Edgar W. Forney, Jr.; Tore R. Johnson, both of Harrisburg, and Michael F. O'Keefe, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 1, 1977, Ser. No. 802,411
Int. Cl.² G02B 5/16
U.S. Cl. 350—96.20 **4 Claims**



1. A means for terminating a bundle of optical fibers and comprising:

a unitary member of plastics material having in consecutive and concentric order a nut-like end portion, an externally threaded portion, a cylindrically shaped portion of a first outer diameter and a tubular portion of a second diameter which is less than said first outer diameter;

said member having a through bore of circular cross-section and of portions of diminishing diameters with a first section having a diameter d_1 extending from said nut-like portion, a second section having a diameter d_2 extending through said tubular portion and a third section positioned between said first and second sections and having a third diameter d_3 where:

$$d_1 > d_3 > d_2$$

said first and third sections and said third and second sections of said bore being joined together by tapered reducing portions;

said bundle of optical fibers extending through said bore with that portion of said bundle which is unsheathed extending completely through said bore; and

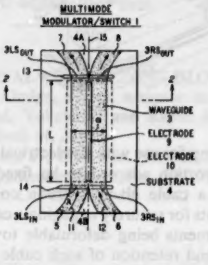
a metal ferrule crimped around said tubular portion to force said tubular portion around said unsheathed bundle of fibers which are retained therein.

4,127,320

MULTIMODE OPTICAL MODULATOR/SWITCH

Tingye Li, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 29, 1977, Ser. No. 811,296
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.13 **23 Claims**



1. An optical modulator/switch device for optical energy having a wavelength λ comprising

a multimode optical strip waveguide including a length of material having an undivided cross-section along all of said length for propagation of optical modes therealong, said length being an integer multiple between 1 and 4 inclusive of approximately one-half of a least critical length in multimode optical strip waveguides of a type having the same cross-sectional dimensions as said waveguide, said least critical length being the least length such that optical energy of said wavelength λ incident upon only one side of said cross-section at an input end exits essentially on the opposite side of said cross-section at an output end after propagation along said critical length;

means for introducing optical energy so as to be incident upon only one side of said cross-section and so as to propagate in a plurality of optical modes therefrom;

means for applying a physical influence so as to induce a transversely symmetric refractive index change all along said length of material of said multimode strip waveguide, said applying means causing said waveguide material to differentially affect the velocity of propagation of one or more of said optical modes relative to the others, so that at one value of said physical influence and propagating optical energy becomes concentrated in said waveguide at only a first output side of said cross-section and exits therefrom and so that at another value of said physical influence said propagating optical energy becomes concentrated in said waveguide at only an opposite output side of said cross-section and exits therefrom;

and means for separating any of said optical energy exiting from said first output side from any of said optical energy exiting from said opposite output side;

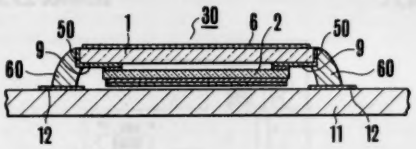
whereby modulation and switching of said exiting optical energy are able to be obtained by means of said device.

4,127,321

LIQUID CRYSTAL DISPLAY APPARATUS

Masaharu Koyama; Tadashi Ishibashi, and Hironari Tanaka, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 30, 1976, Ser. No. 718,830
Claims priority, application Japan, Sep. 5, 1975, 50-106945
Int. Cl.[2] G02F *1/16;* H05K *1/00;* H01L *39/02*
U.S. Cl. 350—336 6 Claims



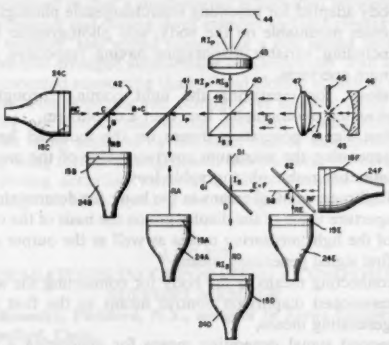
1. Liquid crystal display apparatus comprising a liquid crystal display element including a pair of parallel upper and lower insulator substrates, inner electrodes formed on the opposing surfaces of said substrates, a liquid crystal filled between the inner electrodes, and a plurality of external terminal electrodes formed on one of said substrates and connected to one of said inner electrodes for displaying a desired pattern, said external terminal electrodes extending along the side surface of said one substrate; a circuit board for supporting said display element and provided with a plurality of input terminals, said input terminals being at positions corresponding to the external terminals and lying on the circuit board laterally clear of and substantially at right angles with respect to said side surface of said one substrate; and rigid electroconductive solder members bonding said input terminals to said side surfaces at right angles thereto for electrically interconnecting each of said external terminals and said input terminals respectively, and providing bonded lateral and vertical fixed rigid support of said display element on said circuit board.

4,127,322

HIGH BRIGHTNESS FULL COLOR IMAGE LIGHT VALVE PROJECTION SYSTEM

Alexander D. Jacobson, Topanga; Jan Grinberg, Los Angeles; Donald E. Sprotbery, Huntington Beach, and Donald D. Boswell, Granada Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 5, 1975, Ser. No. 637,906
Int. Cl.[2] H01J *29/89;* G03B *21/00;* G02F *1/01*
U.S. Cl. 353—31 15 Claims



1. In an electro-optical system for projecting in real time very high brightness, full color images from television or other program sources onto a display screen, said system being of the type which additively synthesizes said images by superposition of at least three different primary images and which uses only projection beam optical processes which are non-absorptive to first order in order to avoid overheating the system, the improvement comprising:

(a) light source means for providing a collimated beam of white projection light;

(b) a single polarizer-analyzer beam splitter-recombiner multirefractive layer means positioned to receive said collimated projection light for polarizing and splitting it on a first pass therethrough and for analyzing it on a second pass therethrough for all three of said primary color images;

(c) single projection lens means for projecting said full color image to said display screen;

(d) dichroic mirror means for first separating collimated unmodulated polarized white light leaving said multirefractive layer means into three beams of collimated polarized light of different primary colors to be polarization state modulated and reflected, said dichroic mirror means then passing the three reflected modulated primary color collimated beams back to said multirefractive layer means for analyzing and recombining said three primary color beams to pass a resultant collimated full color image modulated beam from said single multirefractive layer beam splitter-recombiner means to said single projection lens means for forming said full color image; and

(e) first, second and third reflection type polarization state modulation means for spatially modulating a primary color component video image in real time onto each of said first, second and third collimated beams of polarized light of first, second and third primary colors respectively received from said dichroic mirror means by modulation of the state of polarization of the light in said respective beams and for reflecting said three beams back to said multirefractive layer means to be polarization analyzed and recombined into said full color image for projection by said single projection lens means, the optical path length from said projection lens means along any of said three primary color beams to the reflection and modulation means for modulating said beam being equal to said path length along any other of said beams and said reflection and modulation means being positioned so that said projection lens means simultaneously images and superimposes the three primary color component images formed separately at each of said three reflection and modulation means in said respective collimated light beams to form said full color image without the interposition of any other lens means in the optical path between said projection lens means and said reflection and modulation means.

4,127,323

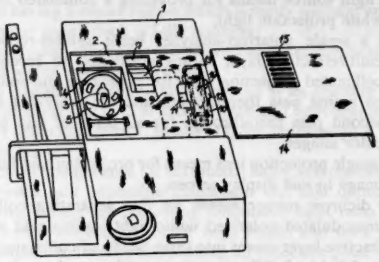
STILL PROJECTOR WITH SPARE PROJECTION LAMP

Reinhard Sobotta, Brunswick, Mascherode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Fed. Rep. of Germany

Filed Aug. 30, 1977, Ser. No. 829,082
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 7628047[U]
Int. Cl.[2] G03B *21/16*
U.S. Cl. 353—61 3 Claims

1. A still projector comprising a projection lamp for illuminating a picture to be projected, a motor driven fan for inducing a current of air to assist in cooling said projection lamp, spare lamp holding means located in such position that said fan is between said holding means and said projection lamp so as to lessen transmission of heat from said projection lamp to a spare lamp in said holding means, and housing means enclosing said

projection lamp, said fan, and said spare lamp holding means, said housing means including a cover section movable from a



closed position to an open position to provide access to said projection lamp and to a spare lamp in said holding means.

4,127,324

DUAL PHOTOGRAPHIC SLIDE PROJECTOR

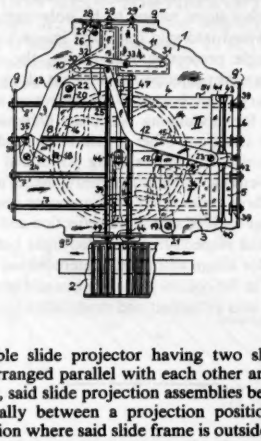
Reinhard Sobotta, Brunswick, Germany, assignor to Rollei-Werke Franke & Heidecke, Brunswick, Germany

Continuation-in-part of Ser. No. 725,140, Sep. 17, 1976, Pat. No. 4,063,465, and Ser. No. 777,834, Mar. 15, 1977, Pat. No. 4,069,724. This application Jun. 14, 1977, Ser. No. 806,560

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627815

Int. Cl.[2] G03B *23/04*

U.S. Cl. 353—116 **10 Claims**



1. A double slide projector having two slide projection assemblies arranged parallel with each other and each having a slide frame, said slide projection assemblies being alternately movable axially between a projection position and a slide change position where said slide frame is outside the light path of the projection assembly in the projection position, a common magazine from which slides are taken in progressive sequence and to which slides are returned in the same sequence, a common slide changer for moving slides from said magazine alternately into said slide frames of said projection assemblies in said slide change position and back to said magazine, said slide changer alternately moving for a full stroke from said magazine to the one of said projection assemblies remote from said magazine and for a partial stroke from said magazine to the one of said projection assemblies nearer to said magazine, and a drive for said slide changer, said projector being characterized by:

a. means for transmitting motion from said drive to said changer, movement of said drive being sufficient to move said changer for said full stroke for each actuation of said drive;

b. said motion transmitting means including a slip clutch; and

c. a stop movably disposable into the path of movement of said changer in response to the position of said projection assemblies to limit movement of said changer to said partial stroke,

d. said stop being biased into said path of movement of said changer and being moved out of said path of movement of said changer against said bias in response to movement of said projection assembly remote from said magazine into said slide change position.

4,127,325

AUTOMATIC EXPOSURE CONTROL CAMERA

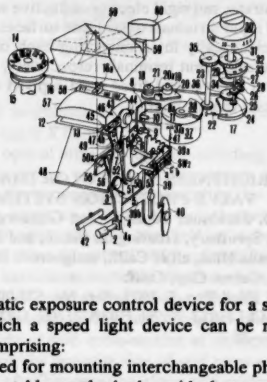
Shohei Ohtaki, Yokohama; Tokuichi Tsunekawa, Yokohama; Zenzo Nakamura, Urawa, and Takashi Uchiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1975, Ser. No. 615,897

Claims priority, application Japan, Sep. 26, 1974, 49-111289; Sep. 26, 1974, 49-111290; Sep. 26, 1974, 49-111291; Sep. 26, 1974, 49-111292; Sep. 26, 1974, 49-111293; Sep. 26, 1974, 49-111294; Oct. 24, 1974, 49-122802; Sep. 26, 1974, 49-111303

Int. Cl.[2] G03B *15/05, 7/08, 7/16, 7/20*

U.S. Cl. 354—32 **9 Claims**



1. An automatic exposure control device for a single reflex camera on which a speed light device can be mounted or dismounted comprising:

a body adapted for mounting interchangeable photographic lenses mountable on the body, said photographic lenses including variable diaphragms having respective maximum apertures,

a means for measuring the light coming through the mounted photographic lens with a diaphragm,

a first signal generating means on the mounted lens for generating the maximum aperture value of the mounted interchangeable photographic lens,

a diaphragm control means in the body for determining the aperture value of the diaphragm on the basis of the output of the light measuring means as well as the output of the first signal generating means,

a connecting means in the body for connecting the above-mentioned diaphragm control means to the first signal generating means,

a second signal generating means for generating a signal corresponding to a predetermined aperture value while taking a flash photograph,

a selector means coupled to the connecting means for switching diaphragm control means from the first signal generating means to the second signal generating means during setting for flash operation.

4,127,326
ELECTRIC SHUTTER

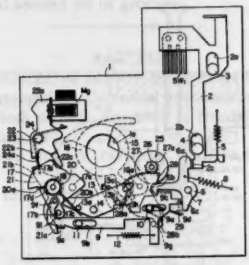
Kunio Matsumoto, Ageo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Apr. 18, 1977, Ser. No. 788,658

Claims priority, application Japan, Apr. 19, 1976, 51-49109[U]; Aug. 21, 1976, 51-112288[U]; Aug. 21, 1976, 51-112289[U]

Int. Cl.² G03B *9/16*

U.S. Cl. 354—234 **3 Claims**



1. An electric shutter comprising a shutter base plate, a cocking plate member supported so as to be movable between its cocked position and its uncocked position on said shutter base plate, a blade opening and closing lever member supported rotatably on said shutter base plate and operatively connected with said cocking plate member, a closing actuating member supported movably between its cocked position and its uncocked position on said base plate and engageable with said cocking plate member and blade opening and closing lever member, an armature lever member supported rotatably on said base plate and capable of holding said closing actuating member in its cocked position, an electromagnet installed on said base plate and capable of attracting said armature lever member to hold said closing actuating member in its cocked position, and an exposure time controlling circuit connected to said electromagnet, said blade opening and closing lever member being moved to open shutter blades when said cocking plate member is moved from the cocked position to the uncocked position by the shutter release, and said blade opening and closing lever member being moved to close the shutter blades by said closing actuating member moving from the cocked position to the uncocked position when a time determined by said exposure time controlling circuit has elapsed, characterized in that a single spring is provided between said blade opening and closing lever member and said closing actuating member, said spring comprising a coil spring having a coil portion arranged substantially concentrically with a base plate-mounted supporting shaft of said closing actuating member, said blade opening and closing lever member being actuated by one end of said spring, and said closing actuating member being actuated by the other end of said spring, the spring being further arranged such that the force for actuating said closing actuating member is larger than the force for actuating said blade opening and closing lever member.

4,127,327
APPARATUSES INCORPORATING A COMPOSITE SUPPORT MEMBER

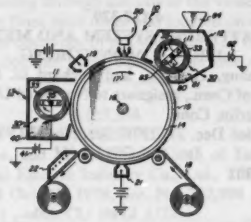
Ivan Rezanka, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1977, Ser. No. 807,998

Int. Cl.² G03G *21/00*

U.S. Cl. 355—15 **32 Claims**

1. A magnetic support member for supporting magnetic particles in an electrostatographic reproducing machine, said support member being formed of a composite comprising a plurality of elongated bodies formed of a magnetic material having a high magnetic permeability distributed in a matrix formed of a non-magnetic material, said support member including a support surface and said elongated bodies being



aligned with respect to said support surface such that the direction of their long dimension is generally perpendicular within about ± 30° to said support surface or to a tangent to said support surface.

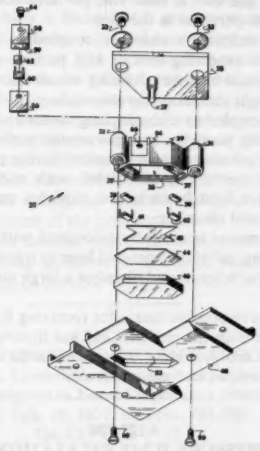
4,127,328
APPARATUS FOR CONDUCTING SECONDARY TESTS FOR SECURITY VALIDATION

Robert L. Gorgone, Mentor; Gerald Iannadrea, Painesville, and Alan J. Kovach, Cleveland, all of Ohio, assignors to Ardac, Inc., Willoughby, Ohio

Filed Nov. 10, 1976, Ser. No. 740,385

Int. Cl.² G06K *9/02*; G01N *21/32*

U.S. Cl. 356—71 **8 Claims**



1. A device for testing the validity of an instument such as a security, note currency, or the like, comprising:

a tray slidable upon a track for receiving such instrument and positioning the same in a test position;

a light source maintained within a housing in juxtaposition to said tray;

first and second photo cells maintained within said housing and respectively opposite first and second areas of the instrument for sensing light reflected from said associated areas; and

first and second comparator circuits interconnected between said first and second photocells and receiving output signals therefrom, said comparator circuits producing an output signal if the reflected light sensed by said first photo cell is greater than a first percentage or less than a second percentage of the reflected light sensed by said second photo cell and wherein said tray is substantially

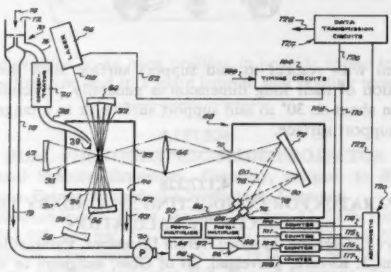
transparent with a portion thereof being highly light reflective, said portion being interposed in juxtaposition to said second photo cell.

4,127,329

RAMAN SCATTERING SYSTEM AND METHOD FOR AEROSOL MONITORING

Richard K. Chang, Hamden, and Richard G. Stafford, New Haven, both of Conn., assignors to Northeast Utilities Service Company, Berlin, Conn.

Filed Dec. 21, 1976, Ser. No. 752,911
Int. Cl.[2] G01J *3/44*
U.S. Cl. 356—301 21 Claims



1. A system for monitoring micron size pollutant particles in a gas such as sulphate aerosols in ambient air comprising:
(a) sampling means for receiving the gas and separating received gas into at least two portions according to the size of the particles in the gas;
(b) means defining a chamber coupled to said sampling means for receiving one of said particle-containing gas portions, said chamber defining means allowing transmission of light radiation therethrough;
(c) means coupled to said sampling means and said chamber for moving particles and gas continuously through said sampling means and said chamber during monitoring;
(d) a laser operatively associated with said chamber for directing a light beam to the particles and gas flowing through said chamber;
(e) optical means operatively associated with said chamber for causing radiation from said laser to traverse the flow of gas and particles in said chamber a large number of times; and
(f) radiation responsive means for receiving Raman radiation scattered from the particles and gas flowing through said chamber and providing information as to a characteristic of the particles and gas molecules.

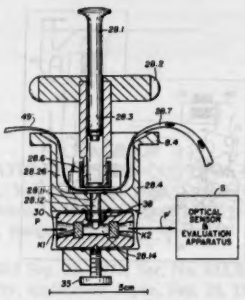
4,127,330

OPTICAL PRESSURE JUMP RELAXATION DETECTOR

Wilhelm Knoche, Göttingen, and Gottfried Wiese, Siebold-shausen, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Continuation-in-part of Ser. No. 498,816, Aug. 19, 1974. This application Apr. 18, 1977, Ser. No. 788,258
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1974, 2408646
The portion of the term of this patent subsequent to Feb. 3, 1993, has been disclaimed.
Int. Cl.[2] G01N *1/10*
U.S. Cl. 356—246 16 Claims

1. Apparatus for investigating fast chemical reactions in liquid samples by the pressure jump relaxation method using optical detection, comprising
a housing (28.8;), a sample cell (30) forming an autoclave sample chamber (28.14) and an auxiliary pressure chamber (28.12;) in said housing, said sample chamber holding a liquid sample, the relaxation pressure characteristics of which are to be investigated;
at least two optical windows (K1, K2;) sealed to said sample chamber to permit placing the chamber in an optical detection beam path (P, P');
an elastic membrane (28.13;) sealingly separating said chambers;
said pressure chamber being formed with an opening (28.11);
a rupturable membrane (28.7;) closing the pressure chamber opening (28.11);



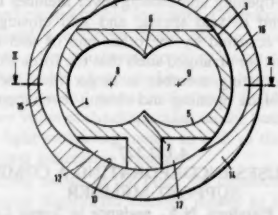
pressure generating means (28.23;) leading to said pressure chamber (28.12;)
a pressure head (28.3) engageable with said rupturable membrane (28.7) to seal the rupturable membrane to said opening (28.11) of said pressure chamber (28.1;);
a pressure head (28.3) having a bayonet end (28.4);
and a bayonet socket (28.5) formed on part of the body (28.8;) of said sample cell to provide for quick release and quick engagement of the rupturable membrane (28.7;) sealing the opening and permitting rapid replacement of the ruptured section of said membrane.

4,127,331

TWIN SCREW EXTRUDERS

Adolf Herbert; Wilhelm Brand, both of Hanover, and Manfred Dienst, Burgdorf, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 861,001
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659037
Int. Cl.[2] B29F *3/02*
U.S. Cl. 366—83 2 Claims



1. A twin screw extruder comprising a cylinder, having twin bores therein to receive the twin screw of the extruder, and a circular casing, with a passage to permit temperature control fluid to flow between the cylinder and the casing, in which said cylinder has its outer surface of a generally circular contour but formed to present a first set of grooves and a second set of grooves, forming parts of said passage and extending obliquely

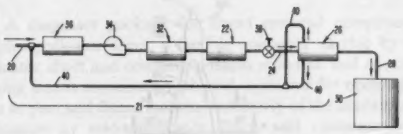
to the longitudinal axis of said cylinder, the bottom wall of said grooves extending parallel to a plane which includes the longitudinal axes of said twin bores with said first set of grooves lying on one side of said plane, and said second set of grooves lying on the other side of said plane, the inclination of said first set of grooves to said axis being opposite to the inclination of said second set of grooves to said axis, and the inside of said casing being formed to present spaced recesses forming further parts of said passage and, except for end ones of said recesses, each connecting one end of a respective one of the grooves of said first set of grooves to one end of a respective one of the grooves of said second set of grooves.

4,127,332

HOMOGENIZING METHOD AND APPARATUS

Alagu P. Thiruvengadam, Columbia, and Ambrose A. Hochrein, Jr., Olney, both of Md., assignors to Daedalean Associates, Inc., Woodbine, Md.

Filed Nov. 19, 1976, Ser. No. 743,490
Int. Cl.² B01F *5/02*
U.S. Cl. 366—131 **28 Claims**



1. A process of homogenizing a liquid and an insoluble component comprising the steps of:

feeding a multicomponent stream including a liquid and at least one insoluble component mixed therein, the stream having a first pressure, p_0;

creating in the multicomponent stream a free turbulent shear layer;

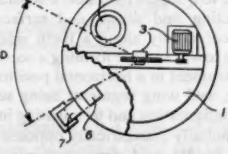
allowing a cavitating flow regime with bubbles to develop in the free turbulent shear layer; and exposing the free turbulent shear layer to a sufficiently high pressure, P_1, where $10 \leqq (p_0/p_1)(P1) \leqq 100$ to violently collapse the bubbles and generate a homogeneized effluent of the liquid and the insoluble component.

4,127,333

CONTINUOUSLY OPERATED CONE-AND-SCREW MIXER

Andrzej Wlodarski; Krystyna Dramińska, both of Warsaw; Wladyslaw Oplotny, Marki; Andrzej Mickiewicz, and Michal Komar, both of Warsaw, all of Poland, assignors to Instytut Chemii Przemslowej, Warsaw, Poland

Filed Mar. 31, 1977, Ser. No. 783,400
Claims priority, application Poland, Apr. 9, 1976, 188658
Int. Cl.² B01F *15/02*
U.S. Cl. 366—131 **5 Claims**



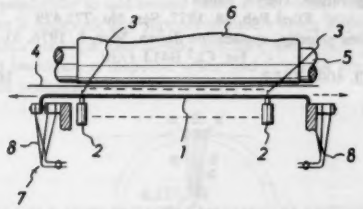
1. Apparatus for blending powders, granulate, particulate and similar bulk materials comprising an inverted conical vessel having its central axis substantially vertical disposed, a screw located within said vessel, a cover for said vessel and means for rotating said screw simultaneously about its own axis and about the central axis of the vessel parallel to the wall thereof, inlet means formed in said cover having an opening located for feeding material to said vessel, an overflow opening forming in the wall of said vessel between the inlet opening and the upper flight of the screw, said overflow opening and said inlet opening being radial spaced by an angle defined by the vertical planes passing through the axis of the vessel and points being least distant from each other and located on edges of the overflow and inlet openings, of not less than 0.35 rad., the area of said overflow opening being equal to the area of the inlet.

4,127,334

DOT PRINTER

Akinori Watanabe, and Masao Sasaki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1976, Ser. No. 732,998
Int. Cl.² B41J *3/12*
U.S. Cl. 400—124 **7 Claims**



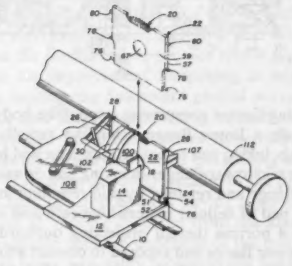
1. A dot printer for printing characters using a slide member slideable along the direction of the row being printed, said slide member being provided with a plurality of dot printing elements each of which is located at a predetermined distance from an adjacent element, a pair of connecting members located at opposite ends of said slide member connecting said slide member to the frame of said dot printer, said pair of connecting members operating to guide and support said slide member and return said slide member after each printing operation, said connecting members connecting said slide member to said frame in one direction and comprising leaf spring means to displace said slide member in a direction orthogonal to said one direction, said orthogonal direction being parallel to the direction of movement of the printing elements when printing, such that said slide member moves in the direction of movement of the printing elements as said slide member moves along the direction of the row being printed.

4,127,335

IMPACT PRINTER WITH CARTRIDGE PRINT WHEEL

David L. Bogert, Lewisville, and Jimmie D. New, Arlington, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 10, 1977, Ser. No. 767,250
Int. Cl.² B41J *1/30*
U.S. Cl. 400—144.2 **16 Claims**



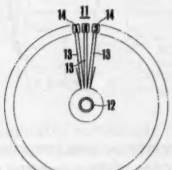
16. In an impact printer for use with a print wheel cartridge:

a moveable carriage, a motor supported by said carriage, a rotatable shaft extending from said motor and having drive coupling means at one end thereof, said carriage having guide means supported thereon for slidably receiving the cartridge therein, said guide means being arranged for guiding the cartridge for movement in a direction generally transverse to the axis of said shaft, said guide means having means for pivotably supporting the cartridge on an axis which is generally transverse to said shaft, and means carried by said carriage for engaging the cartridge and pivoting the cartridge about said pivot supporting means in a direction towards said drive coupling means into a print wheel loaded position.

4,127,336
TYPE HEADS

Yuji Hiraoka, Kodaira, and Yodo Kageyama, Tokorozawa, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 28, 1977, Ser. No. 772,479
Claims priority, application Japan, Mar. 8, 1976, 51-25260
Int. Cl.² B41J *1/30*
U.S. Cl. 400—144.2 **10 Claims**

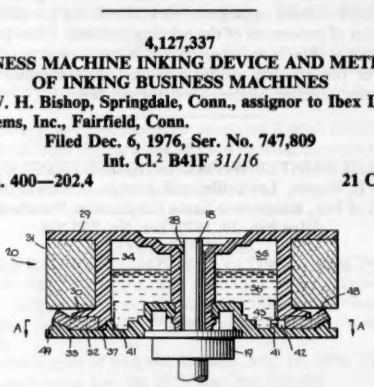


1. A type head comprising a hub, an annular rim encircling the hub in a concentric relationship, a first plurality of equally spaced radial spokes interconnecting said hub and said annular rim, a second plurality, greater than said first plurality, of supporting arms radially extending from said annular rim, and type units mounted on the outer ends of the respective supporting arms, said hub, said rim, said spokes and said arms being combined to form a unitary body.

4,127,337
BUSINESS MACHINE INKING DEVICE AND METHOD OF INKING BUSINESS MACHINES

John W. H. Bishop, Springdale, Conn., assignor to Ibex Inking Systems, Inc., Fairfield, Conn.

Filed Dec. 6, 1976, Ser. No. 747,809
Int. Cl.² B41F *31/16*
U.S. Cl. 400—202.4 **21 Claims**

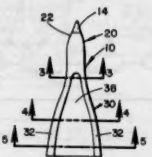


1. An inking device comprising a spoollike body, said body having a hub, a lower flange extending radially outwardly from said hub, inking pad retention means on said hub, said hub being above said lower flange, an inking pad on said hub above said lower flange and retained by said retention means, an ink conducting pad of cellular material beneath said lower flange and having a portion thereof projecting outwardly from beneath said lower flange and exposed to contact a lower portion of said inking pad only radially outwardly of said lower flange near the ink delivery surface of said inking pad, said lower flange overlying said ink conducting pad to be positioned between said inking pad and said ink conducting pad inwardly of said projecting portion, an ink reservoir in said hub, said hub and said lower flange isolating said inking pad from said ink reservoir whereby ink from said reservoir may be conducted to said inking pad only at said exposed portion of said ink conducting pad, said ink conducting pad communicating in ink receiving relation with the ink reservoir to receive ink from said reservoir and conduct it to the portion thereof contacting said inking pad, said inking pad having an exposed ink delivery surface above said lower portion, said ink delivery surface being adapted to be contacted by an ink receiving means and to deliver ink thereto.

4,127,338
WRITING INSTRUMENT

Sidney C. Laybourne, Rte. 5, Box 166-A, Martinsburg, W. Va. 25401

Filed Oct. 27, 1976, Ser. No. 736,158
Int. Cl.² A46B *5/02*
U.S. Cl. 401—8 **1 Claim**



1. A writing instrument comprising an integral one piece holder formed of a resilient synthetic resin and provided with a relatively elongate generally cylindrical gripping section terminating forwardly in a reduced nose portion and a support section terminating rearwardly in a generally planar end surface positioned transversely of said holder, said holder including an elongate axially disposed bore opening at opposite ends through said nose portion and said planar end surface, a writing unit removably mounted within said bore and provided forwardly with a point projecting through and beyond said nose portion and rearwardly with a vent communicating with the atmosphere through said aperatured planar end surface, a pair of wing segments tapering rearwardly from adjacent said gripping section and flaring outwardly from diametrically opposed sides of said support section, a concave surface formed in said support section by a surface of revolution intersecting said planar end surface and extending forwardly thereof axially along a third side of said support section, said wing segments curving upwardly relative to said third side around said surface of revolution and defining a generally circular band dimensioned to receive the finger of a user, the rearward surface of said band comprising a generally flat surface aligned with said planar end surface and forming therewith a first stand adapted to hold said instrument in a vertical position relative to a support surface, a substantially flat lower surface intersecting said planar end surface and extending forwardly thereof axially along a forth side of said support section, said flat lower surface forming a second stand adapted to hold said instrument in a horizontal position relative to said support surface, said wing segments being substantially equal in length and configuration and terminating in contiguous ends at a point substantially diametrically opposed to the longitudinal axis of said holder, said wing segments progressively decreasing in both thickness and width and increasing in resiliency with the distance from said support section to permit uniform flexure of said wing segments and radial expansion of said band in response to the application of outward pressure exerted internally thereof, said radially expansive band and said rearwardly tapering wing segments cooperatively providing both for angular skewing of the user's finger relative to the longitudinal axis of said holder in positioning said instrument

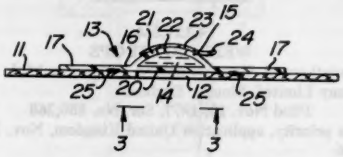
for use, and for limited transverse movement between the user's finger and said holder during use.

4,127,339

DISPENSER PACKAGE FOR FLUENT MATERIAL

Joseph J. Malacheski; Edward Stelmack, both of 28 E. Division St., and Richard J. Zenda, 21 O'Neill Ave., all of Wilkes-Barre, Pa. 18702

Filed Oct. 19, 1976, Ser. No. 733,917
Int. Cl.[2] B43K 5/14; A61M 35/00
U.S. Cl. 401—132 **2 Claims**



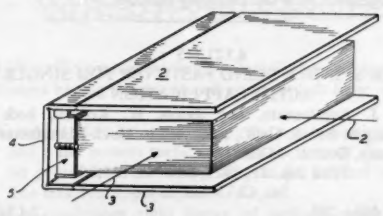
1. A dispenser package for fluent material comprising a flexible applicator sheet, a flexible container carried by said applicator sheet and containing fluent material, and container opening means associated with said container for opening the latter to pass said fluent material exteriorly of the container for application by said applicator sheet, said container being mounted on said applicator sheet having one side accessible from one side of said sheet for finger-depression to express the fluent material from the other side of said container on the other side of said applicator sheet, said container comprising an enclosure of flexible sheet material for tactile sensitivity in application, and a flange on said enclosure secured to said applicator sheet and having outwardly extending finger grip portions on opposite sides of said enclosure for holding the enclosure against finger-depression, said container being mounted on said other side of said sheet, and said applicator sheet having a passageway affording said finger access.

4,127,340

MOVABLE HINGE BINDER

Robert E. Almgren, Chatham, N.J., assignor to American Loose Leaf Corp., Clifton, N.J.

Continuation of Ser. No. 629,578, Nov. 6, 1975, abandoned. This application Sep. 6, 1977, Ser. No. 830,969
Int. Cl.[2] B42F 13/14
U.S. Cl. 402—44 **11 Claims**



1. A binder mechanism for a loose leaf binder for holding pages in the binder, including a cover and backbone comprising:

support members carried by said cover and backbone;

prongs, for holding pages, projecting from said support members;

hinge means interconnecting said support members, said hinge means including at least two interconnected substantially right angular sections, each said right angular section including first and second perpendicular legs, said first legs being hingedly connected to each other and said second legs being connected to said supports;

rotative means being mounting said hinge means for rotation with respect to said support members and so as to permit rotation of said hinge means between a closed position for the binder mechanism wherein the prongs are closed and an open position for the binder mechanisms wherein the prongs are open and pages can be inserted;

said interconnection between said first legs being such that when said first legs are in said closed position said first legs are disposed in a first plane that is perpendicular to both a second plane within which the backbone of the binder is disposed and third and forth plane within which said support members lie;

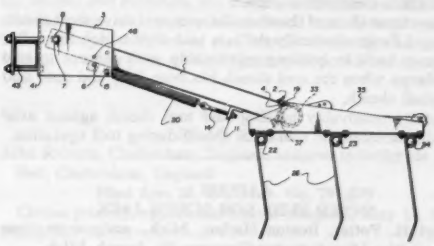
said interconnection between said first legs furthermore being such that when said first legs are in said open position said first legs are disposed in a fifth plane that is perpendicular to said second plane within which the backbone is disposed, said support members being disposed in a sixth plane parallel to said second plane within which said backbone is disposed when said first legs are in said open position.

4,127,341

ADJUSTABLE DEFLECTION LIMITING ELEMENT FOR TRAILING ARM ASSEMBLY

G. Wesley Stevens, Regina, Canada, assignor to Degelman Industries Ltd., Regina, Canada

Filed Nov. 9, 1977, Ser. No. 849,866
Int. Cl.[2] A01B 61/04
U.S. Cl. 403—113 **5 Claims**



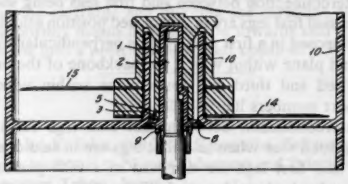
1. In a trailing arm mechanism having a support frame, a trailing arm pivotally mounted on the support frame, a frame spring anchoring means fixed to the support frame at a position lower than the pivotal axis of the trailing arm, an arm spring anchoring means fixed to the trailing arm at a position on the underside of the arm remote from the pivotal axis thereof, and a coil spring normally under tension connected between the spring anchoring means, and wherein the support frame comprises a pair of vertical parallel plates one on each side of the trailing arm and closely spaced therefrom and extending rearwardly from the pivotal axis to provide lateral support for the trailing arm; the improvement comprising an adjustable stop element for limiting the downward pivotal movement of the trailing arm, said stop element being rotatably transversely mounted between the parallel plates forwardly of the arm spring anchoring means underneath the trailing arm and having an axis of rotation generally parallel to the pivotal axis of the trailing arm, the stop element having a plurality of abutment surfaces at varying distances from the axis of rotation thereof engageable with the underside of the trailing arm, the stop element being adjustably rotatable and fastenable to the support frame to present any selected one of said abutment surfaces to the trailing arm.

4,127,342

SLEEVED, SNAP-ON HUB-TO-SHAFT CONNECTION

Marcel Coggiola, Le Perreux, France, assignor to Robot Coupe, S.A., Rosny sous Bois, France

Filed Jun. 29, 1977, Ser. No. 811,433
Claims priority, application France Jul. 12, 1976, 7621251
Int. Cl.[2] F16B *21/08*
U.S. Cl. 403—243 8 Claims



1. Snap-on fastener apparatus for removably fixing rotary tools onto a drive shaft, particularly for household electrical appliances, such as food processors, such appliances including a drive shaft, a shaft sheath protectively enclosing the drive shaft, and a removable rotary tool having a hub with a tool sheath slidable over said shaft sheath,

said snap-on fastener apparatus comprising:

a flange on one of said sheaths,

a plurality of resilient, deflectable retainer clips on the other of said sheaths,

said resilient deflectable clips having hooking surfaces,

said flange and said resilient clips each defining a clearance diameter,

one of said clearance diameters being an inside clearance diameter and the other being an outside clearance diameter,

said inside clearance diameter being slightly less than said outside clearance diameter,

whereby as the tool sheath is slid onto said drive shaft sheath said flange elastically deflects said clips which thereafter snap back in hooking relationship with respect to said flange when the tool sheath has been fully slid onto said shaft sheath,

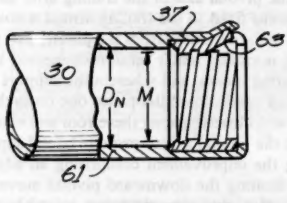
thereby removably holding said tool sheath against axial displacement on said shaft sheath during tool operation.

4,127,343

INNER TUBE FOR SCREW JACK

Robert H. Potter, Benton Harbor, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Sep. 19, 1977, Ser. No. 834,272
Int. Cl.[2] F16B *3/00*
U.S. Cl. 403—285 9 Claims



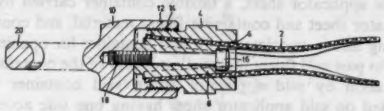
1. A tube assembly for use in a screw jack or the like, comprising in combination, a hollow tube member having an outer surface, a first inner surface, and a tube wall extending in thickness between the outer and first inner surfaces, the tube being provided at one end with a recess extending over a given axial distance within the tube from an outer tube end and being at least partly defined by a second tube inner surface located closer to the outer surface than the first inner surface, the tube wall thickness being correspondingly reduced at the recess location, and an annular bushing located within the tube member recess, the bushing being axially shorter than the annular recess by a distance substantially equal to the reduced thickness of the tube wall at the recess location, a tip portion of the tube recessed wall being crimped over the received bushing outer end to lock the bushing in the tube against relative tube member-bushing axial movement, a chordal portion of the bushing and a corresponding chordal portion of the tube member being displaced radially outwardly of the surrounding portions of the bushing and tube member to form an external tube assembly key and to lock the bushing in the tube member against relative tube member-bushing rotational motion.

4,127,344

WEBBING STROPS

Karol Kwiatkowski, Slough, England, assignor to M. L. Aviation Company Limited, Slough, England

Filed Nov. 10, 1977, Ser. No. 850,268
Claims priority, application United Kingdom, Nov. 17, 1976, 47940/76
Int. Cl.[2] F16B *2/14*
U.S. Cl. 403—374 6 Claims



1. A fitting for securing to the end of a flat strop, comprising:

(a) a body formed with a through hole which tapers for at least a greater part of the length thereof, the body having a surface provided with a first set of screw threads;

(b) a tapered plug having a taper which corresponds to that of the through bore, the plug having a larger end, a smaller end, and being accommodated within the through bore;

(c) a retaining member formed with a second set of screw threads, the second set of screw threads engaging the first set of screw threads, the retaining member engaging the larger end of the plug;

(d) the retaining member having an attachment means associated therewith for transmitting to the retaining member such tensile force as may be applied to the attachment portion; and,

(e) fastening means interconnecting the plug and the retaining member for retaining the larger end of the plug in firm engagement with the retaining member.

4,127,345

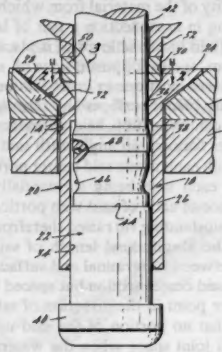
LOCK SPINDLE BLIND FASTENER FOR SINGLE ACTION APPLICATION

Donald J. Angelosanto, and James W. Kendall, both of Huntington Beach, Calif., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed Sep. 21, 1977, Ser. No. 835,363
Int. Cl.[2] F16B *13/06*
U.S. Cl. 403—388 3 Claims

1. In combination, an inner part having an opening provided therein, an outer part having a conventional countersunk opening provided therein and positioned in aligned relationship with said inner part opening, a pull type blind fastening for use in connecting said inner and outer parts, said fastening comprising a tubular sleeve and a mandrel positioned for longitudinal movement therein to form a blind head on the sleeve, said sleeve having a countersunk head in which the under surface has an included angle greater than the included angle of the countersunk opening, said head having an entrant straight wall counterbore terminating in an inwardly directed entry resistance angle less than the included angle of said countersunk

head, said mandrel having an annular lock pocket, and an annular lock collar positioned to embrace said mandrel within said straight wall counterbore and adapted to be moved into said lock pocket along said entry angle while said under sur-



face of said countersunk head is moved against said countersunk opening and said straight wall counterbore is deflected by said movement of said countersunk head against said countersunk opening to form a back taper over the end of the lock collar when the fastener is set.

4,127,346

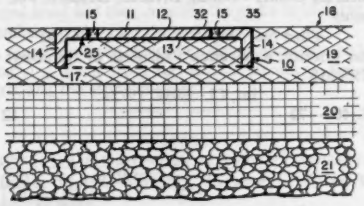
UNIVERSAL TRAFFIC CONTROL MARKER

Lloyd J. Bouffard, 100 Oxford Dr., Apt. 704, Monroeville, Pa. 15146

Continuation of Ser. No. 564,849, Apr. 3, 1975, abandoned. This application May 5, 1976, Ser. No. 683,304

Int. Cl.[2] E01F *9/04*

U.S. Cl. 404—15 **13 Claims**



1. A traffic control marker, for installation in a multi-layer pavement having a fine textured upper asphalt layer, comprising:

(a) a rigid plate having a smooth flat top indicating surface and a flat bottom surface, having no cutouts therein and no protrusions therefrom, adapted for contact with the fine textured upper asphalt layer;

(b) a continuous rigid flange of uniform depth having smooth sides depending from the peripheral portion of said rigid plate at substantially a right angle, having a depth less than the thickness of the fine textured upper asphalt layer, and adapted for embedment into the fine textured asphalt layer to a depth at which said smooth flat top indicating surface of said rigid plate is flush with the top surface of the surrounding pavement to hold the traffic control marker in place; and,

(c) at least one relatively small bore extending through said rigid plate for venting gas trapped when the traffic control marker is embedded in the fine textured asphalt layer.

4,127,347

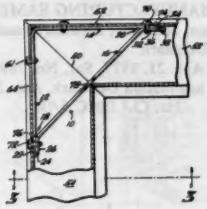
CORNER GUSSET

Roger D. Pritchard, 100 S. 17th St., Sebring, Ohio 44672

Filed Aug. 10, 1977, Ser. No. 823,511

Int. Cl.[2] E04B *1/38;* **F16B** *7/00*

U.S. Cl. 403—402 **3 Claims**



1. A corner gusset for fastening a miter joint defined by abutting angular ends of two angularly disposed hollow rails of a frame structure, each rail having generally parallel side walls and an outer edge web spanning the side walls, said corner gusset comprising a generally right triangular bracket formed from a straight bar length of a suitable material such as steel and aluminum, the bar being bent to define first and second right angularly disposed legs and a hypotenuse having first and second ends, comprising a draw bar, and forming first and second acute angles relative to said first and second legs, an extension from said first leg beyond said first acute angle, an extension from said draw bar first end angled relative thereto to overlie said first leg extension in an integrally formed bent relation thereto; an extension from said second leg terminating beyond said second acute angle, an extension from said draw bar second end, angled relative thereto to overlie said second leg extensions, means to interlock said second leg and draw bar second end extensions comprising a notch formed in said draw bar second end extension and a lug extending outwardly from said second leg extension, positioned and sized for bent engagement through said notch, and means to attach said gusset within the miter joint of the angularly disposed hollow rails.

4,127,348

ROAD STUDS

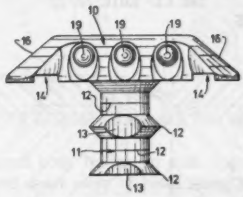
John Roberts, Cheltenham, England, assignor to Indigrade Limited, Cheltenham, England

Filed Apr. 28, 1977, Ser. No. 791,879

Claims priority, application United Kingdom, May 12, 1976, 19475/76

Int. Cl.[2] E01F *9/04*

U.S. Cl. 404—16 **3 Claims**



1. A road stud the body of which includes two operative faces each of which incorporates reflective elements, each of said operative faces having outer portions which provide coextensive side ramps and a central portion which provides a steeper and shorter ramp rising between the side ramps to the upper edges thereof, the reflective elements being wholly embedded in the central ramp portion, the reflective elements being bi-convex and being disposed in the central ramp portion in generally horizontal bores which have flared openings into the ramp surface, the side ramps being inclined at between 25°

and 30° to the horizontal and the central ramp portion being inclined at about 45° to the horizontal from top to bottom thereof and between said bores.

4,127,349

CONCRETE PAVING STONE AND METHOD OF MANUFACTURING SAME

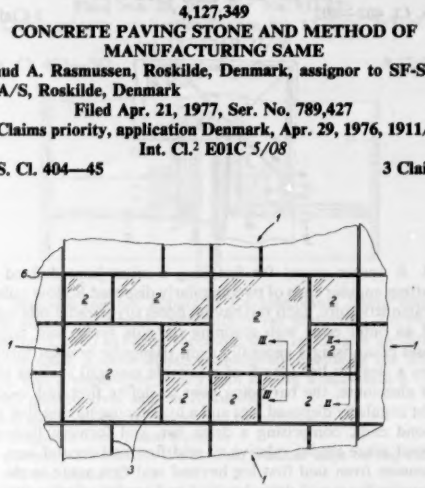
Knud A. Rasmussen, Roskilde, Denmark, assignor to SF-Sten A/S, Roskilde, Denmark

Filed Apr. 21, 1977, Ser. No. 789,427

Claims priority, application Denmark, Apr. 29, 1976, 1911/76

Int. Cl.² E01C *5/08*

U.S. Cl. 404—45 **3 Claims**



1. A concrete paving-stone comprising a plurality of single flags and at least one rib between adjacent single flags, which rib extends from the underside of the stone to at most the upper edge of the lateral face of each single flag, said rib having a thickness less than that of the adjacent flags and being unitary therewith, the lower parts of the ribs and flags consisting of concrete with a reinforcement comprising fibers for increasing the tensile strength thereof, and for holding said flags together, the upper part of the rib consisting of concrete without any reinforcement, whereby said paving-stone is resistant to breaking by strains due to support thereof adjacent two spaced lateral edges during shipping; said ribs, upon application of vibration after installation, breaking to thereby result in individual flags.

4,127,350

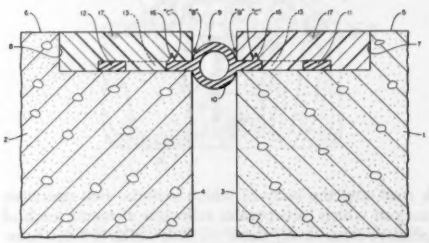
ELASTIC JOINT SPANNING WATERSTOP ELEMENT

Victor Weber, Hinsdale, Ill., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jun. 2, 1977, Ser. No. 802,632

Int. Cl.² E01C *11/10*

U.S. Cl. 404—65 **6 Claims**



1. A flexible, elastic, joint-spanning waterstop element designed to be locked into recesses formed on either side of a joint space in two opposed, spaced, sections of concrete and at the surfaces thereof, by hardenable fluid grout placed thereover, said waterstop element being in the form of a continuous length of flexible elastic strip material having in cross-section a width greater than its height and greater than the width of said joint space, said strip further in cross-section having a center portion for location in the joint space between said concrete sections and over which no grout is placed, said center portion being configured such that it will stretch laterally beyond the normal elastic ability of the material from which it is made, said strip further having in cross-section a pair of lateral web portions over which fluid hardenable grout is placed each extending outwardly from, and on opposite sides of, said center portion; each of said web portions in cross-section having upper and lower generally planar surfaces and terminal end surfaces remote from said center portion, said upper and lower generally planar surfaces forming an angle with said center portion at the point at which each meets said center portion, said lower planar surface of each web being substantially smooth, said upper planar surface of each of said web portions in cross-section having a first upstanding rib raised therefrom continuously extending along the longitudinal length of said strip and located generally between its terminal end surface and the point at which it meets said center section but spaced back a distance from such juncture point in the direction of said terminal end surface in order that no portion of the said upstanding rib is located in the said joint space when the waterstop element is positioned between said concrete sections and in order further that said rib will be fully embedded in the fluid grout placed thereover; said web portions of said strip further each having a plurality of preformed openings therethrough located between said first raised rib and said terminal end surfaces and a second upstanding rib raised therefrom also continuously extending along the longitudinal length of said strip and located between said openings and said terminal end surfaces; the said openings in each web portion connecting the said upper and lower surfaces of said web portions, all cross-wise dimensions of said openings being at least about ¼ inch and said openings being spaced from one another along the longitudinal length of the strip a maximum distance of 1 to 2 inches.

4,127,351

DYNAMIC SOIL COMPACTION

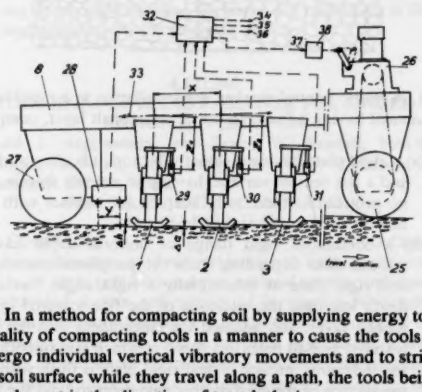
Gülertan Vural, Emmelshausen, Fed. Rep. of Germany, assignor to Koehring GmbH - Bomag Division, Boppard, Fed. Rep. of Germany

Filed Nov. 30, 1976, Ser. No. 746,102

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1975, 2554013

Int. Cl.² E01C *19/34*

U.S. Cl. 404—72 **12 Claims**



1. In a method for compacting soil by supplying energy to a plurality of compacting tools in a manner to cause the tools to undergo individual vertical vibratory movements and to strike the soil surface while they travel along a path, the tools being spaced apart in the direction of travel, the improvement comprising: monitoring one of the amount of settlement of the compacted soil at the soil surface and the vibrational power supplied to the tools by measuring the difference in height between corresponding points of adjacent tools when each is at

the lowest point of its vibratory movement; and controlling the supply of energy to the tools in order to vary the amplitude of the vibratory movements of the tools in dependence on the monitoring result in a direction to maximize the resulting degree of soil compaction.

4,127,352

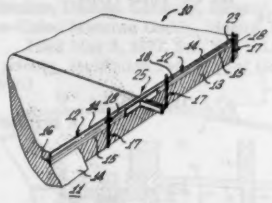
PLACEMENT AND SUPPORT SYSTEM FOR STRIPS IN CONCRETE

Harlan J. Peters, 1160 S. Cypress St., La Habra, Calif. 90631

Continuation-in-part of Ser. No. 692,565, Jun. 3, 1976. This application Dec. 12, 1977, Ser. No. 859,913

Int. Cl.[2] E01C *11/02*

U.S. Cl. 404—74 **37 Claims**



33. The method of positioning and supporting elongated strips in the laying of concrete slabs and the like on the ground, comprising the steps of:

providing a plurality of elongated strips in sections of preselected lengths, and a plurality of socket members spaced along the strips to receive stakes;

providing a plurality of stakes that are insertible freely through said socket members and are selectively engageable and disengageable upon rotation thereof to lock the socket members and the strips in place along the stakes and to release the socket members and the strips;

positioning the strips in a row with the socket members spaced along the row, by inserting the stakes loosely through the socket members, driving the stakes into the ground, and positioning each strip at a selected level by raising it and the associated socket members to the selected level and then rotating the stake to lock the socket members in place on the stake; and

after pouring of the concrete, disengaging the stakes and removing them from the socket members, leaving the latter and the strips in place.

4,127,353

DETACHABLE CONNECTOR FOR CABINETS

Peter Busse, Vlotho, Germany, assignor to Firma Richard Heinze, Germany

Filed May 25, 1977, Ser. No. 800,316

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625180; Jan. 22, 1977, 2702643

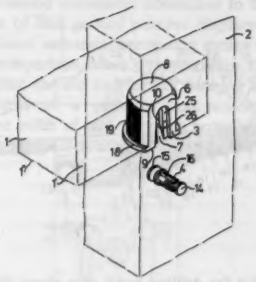
Int. Cl.[2] F16B *12/34*

U.S. Cl. 403—245 **21 Claims**

1. A furniture fitting for detachable connection of first and second furniture components through abutting surfaces of said components, said fitting comprising:

(a) an expansion dowel operable for insertion in a bore hole in a first of said furniture components along an axis perpendicular to the abutting surface of said first component, said dowel having a displaceable expansion bolt, one end of said bolt defining an engagement surface and an expandable portion disposed about said bolt, said expandable portions having dimensions such as to permit insertion in an unexpanded state in said bore hole and being expandable for anchoring in said bore hole upon axial displacement of said expansion bolt in the direction of the engagement surface end, and

(b) a holding piece operable for insertion along an axis parallel to the abutting surface of the second of said furniture components in a recess in said second component communicating with said abutting surface, said holding piece having a base portion and a side wall portion with a slot being defined on said side wall portion, the internal edge portions of said slot having obliquely sloping surfaces



operable to engage said engagement end of said bolt and, upon sliding movement of said abutting furniture surfaces, to displace said bolt relative to said expandable portion and thereby expand said expandable portion as said bolt follows said obliquely sloping surfaces.

4,127,354

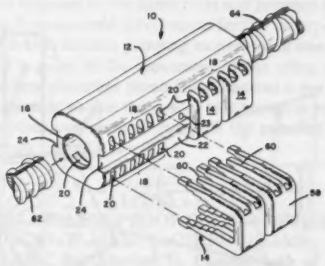
REBAR SECURING DEVICE

James L. Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 12, 1977, Ser. No. 841,278

Int. Cl.[2] F16B *2/14*

U.S. Cl. 403—279 **6 Claims**



1. A device for securing reinforcing bars and the like, comprising:

a. an elongated body having an axial opening therein and two spaced apart rows of holes along a portion of the length of and extending normally through the body, said holes intersecting the opening on opposing sides; and

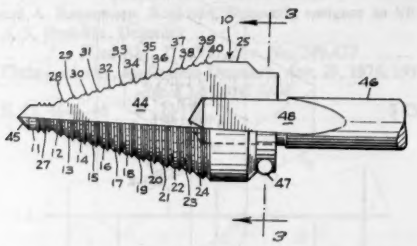
b. one or more staples, each having a pair of legs extending from either side of a bight with the legs having a plurality of cutting teeth on the inside surface thereof, each having an edge formed between step and riser portions which extend along the axis of the staple, said legs being adapted to be driven into the holes whereby said cutting teeth may broach a reinforcing bar or the like which may be positioned in said opening thereby securing it against axial movement.

4,127,355

WOOD BIT

Harry C. Oakes, Academy St., Wyoming, N.Y. 14591

Filed Sep. 6, 1977, Ser. No. 830,861
Int. Cl.[2] B23B *51/00*
U.S. Cl. 408—225 **8 Claims**



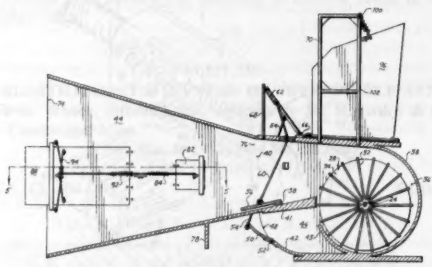
1. A drill bit for drilling holes of a given diameter in wood or similar material comprising a generally conical drill body having a series of stepped cylindrical portions increasing in diameter from the small entry end of the drill to the full diameter of the hole to be drilled, each of said cylindrical portions extending in a helical direction, flute means extending generally lengthwise of said drill body to provide cutting edges for said cylindrical portions and a discharge path for material cut from the workpiece, and a male thread extending helically along a plurality of said cylindrical portions and extending radially outwardly therefrom to engage the walls of the workpiece and thus feed the drill through the workpiece.

4,127,356

WIND MOTOR MACHINE

Richard D. Murphy, Plainview, Tex., assignor to Thomas R. Tipps, Amarillo, Tex., a part interest

Filed Jun. 9, 1977, Ser. No. 804,990
Int. Cl.[2] F03D *7/00*
U.S. Cl. 415—2 **15 Claims**



1. In a wind machine to extract energy from the wind having
   a. a housing,
   b. an impeller in the housing,
   c. a shaft on the impeller journaled to the housing
   d. vanes on the impeller which cause the impeller to turn in the wind,
   e. a funnel forming a portion of the housing to increase the wind at the impeller, and
   f. mounting means on the housing for rotating the housing about a vertical axis;

the improved structure for regulating the speed of the wheel comprising:

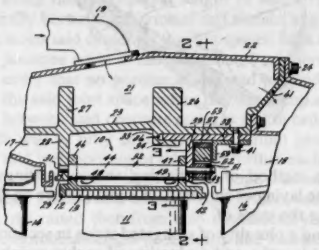
   g. at least one flap mounted for movement on the housing, and
   h. limit means responsive to the movement of and connected to the flap for reducing the wind on the impeller, and
   j. said flap is mounted upon the funnel portion of the housing, and
   k. said flap acts to rotate the entire housing so that the funnel no longer faces directly into the wind but at an angle thereto, thus
   m. reducing the wind on the impeller.

4,127,357

VARIABLE SHROUD FOR A TURBOMACHINE

William R. Patterson, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 24, 1977, Ser. No. 809,582
Int. Cl.[2] F01D *11/08*
U.S. Cl. 415—116 **15 Claims**



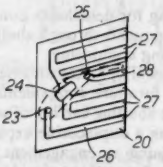
1. An improved shroud support for a turbomachine of the type having a rotor disposed in close radial relationship with a plurality of circumscribing shroud segments which are positioned by an outer shroud support structure wherein the improvement comprises:
   (a) a shaft movably interconnecting the shroud segments and support structure, said shaft being rotatable within the support structure on an axis parallel with the axis of the rotor and having an eccentric surface which frictionally engages and supports a shroud segment; and
   (b) means to rotate said shaft in response to predetermined turbomachine operating parameters to selectively modulate the radial position of the shroud segment.

4,127,358

BLADE OR VANE FOR A GAS TURBINE ENGINE

Roger J. Parkes, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,369
Claims priority, application United Kingdom, Apr. 8, 1976, 14221/76
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—97 R **6 Claims**



1. A blade or vane for a gas turbine engine comprising: an aerofoil section and at least one shroud member, said shroud member including a first gas contacting piece and a second piece secured to said first piece, said first gas contacting piece being integral with said aerofoil section and having one surface adjacent said aerofoil section and another surface distant from

said aerofoil section having a convolute pattern of open-faced grooves formed therein over substantially the whole area thereof, said second piece, when secured to said first piece, being positioned to overlie and close the open face of said grooves to form a plurality of passages having an opening to the exterior of said shroud member, said passages being divided into a plurality of individual groups, and a plurality of cooling ducts extending through said aerofoil section for supplying cooling fluid to said passages, a different one of said ducts being arranged to feed each of said plurality of groups of passages individually of another of said groups of passages.

4,127,359

TURBOMACHINE ROTOR HAVING A SEALING RING

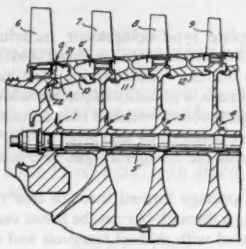
Norbert Stephan, Dachau, Germany, assignor to Motoren-Und Turbinen-Union Munchen GmbH, Munich, Germany

Filed May 5, 1977, Ser. No. 793,997

Claims priority, application Fed. Rep. of Germany, May 11, 1976, 2620762

Int. Cl.² F01D *5/06*

U.S. Cl. 416—198 A **4 Claims**



1. A rotor for a turbomachine, comprising:

a plurality of rotor disks each carrying radially extending blades, p1 an annular spacer having a substantially double-T-shaped cross-section located between two successive ones of said disks, said spacer and one of said disks defining an annular space between them, and a gap existing between said spacer and one disk through which the region radially outwardly of said spacer and between the blades of the two successive disks communicates with the annular space, and

a sealing ring within the annular space, said sealing ring being a strip of springy sheet material having a cross-sectional contour approximating the shape of the radially outer wall of the annular space and arranged with its width extending across the gap, said sealing ring being compressed across its width to axially load it, and the widthwise central portion of said sealing ring being bellied toward the axis of the rotor when the rotor is stationary, said bellied portion being straightened and said sealing ring being pressed by centrifugal force against the radially outer wall of the annular space to seal the gap when the rotor rotates.

4,127,360

BUMPLESS PUMP APPARATUS ADJUSTABLE TO MEET SLAVE SYSTEM NEEDS

Clarence W. Carpenter, 8610 Cedarbrake, Houston, Tex. 77055

Filed Dec. 16, 1976, Ser. No. 751,137

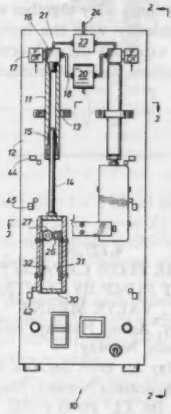
Int. Cl.² F04B *41/06, 35/04*

U.S. Cl. 417—5 **12 Claims**

1. An improved pump which comprises:

first and second positive displacement pumps which have a chamber and a piston means therein, said piston means being connected to a piston rod and extending therefrom and driven by a motive means which reciprocates the piston rod to thereby pump fluid from the cylinder into an outlet line wherein each of said positive displacement pumps includes a valve means to selectively be connected to a downstream system and wherein the downstream system has a specific pressure and one of said pumps has a pump pressure equal to the downstream pressure and the other of said pumps has a pressure below the downstream pressure;

a pressure actuated transducer connected to the respective outlet lines of said pair of positive displacement pumps, said transducer means incorporating means responsive to pressure comparison cross over between the two pressures supplied thereto and further forming an output signal indicative of a pressure comparison cross over wherein the other of said pumps is brought up to a pressure matching the downstream pressure; and



drive means respectively connected to the motive means for the respective pair of pumps, said drive means incorporating means responsive to the output signals supplied thereto to reverse operation of the positive displacement pumps on response to the signal from said pressure responsive switch means, said drive means further incorporating a switch which initiates pumping movement of one of said pumps at a point in the movement of the other of said pumps where the other pump has exhausted a portion of its displacement so that the first of said pumps is reversed and the other continues to pump at the pressure of the downstream system.

4,127,361

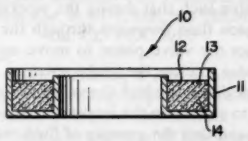
AIR-BAKEABLE WATER-PROOF GETTER DEVICE AND METHOD OF MANUFACTURING SAME

Stephen J. Hellier, and Anselmo G. Passoni, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Nov. 29, 1976, Ser. No. 745,982

Int. Cl.² F04B *37/04;* **H01J** *7/18;* **H01K** *1/56*

U.S. Cl. 417—48 **19 Claims**



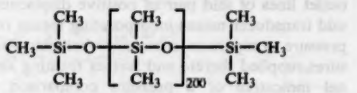
1. A getter device comprising a barium alloy; a metal capable of reacting exothermically admixed with the barium alloy and having an organosilane coating.

9. A getter device of claim 1 comprising:

A. an annular ring;

B. a pulverulent intimate mixture of a barium-aluminium alloy and nickel held by the ring;

C. an organosilane coating covering the entire getter device wherein said coating is an organosilane of Formula II



12. A method of manufacturing an exothermic getter device comprising the steps of pressing a pulverulent mixture comprising a barium-aluminum alloy together with a metal capable of reacting exothermically with the barium-aluminum alloy into a holder, then exposing the pulverulent mixture in the holder to an organosilane, thereby producing a coating.

4,127,362

REGULATING THE FLOW CAPACITY OF A POSITIVE DISPLACEMENT PUMP BY CONTROLLING INLET VALVE MEANS

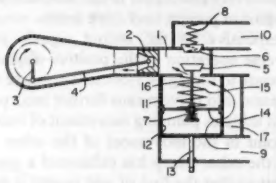
Tron-Halvard Fladby, Asker, Norway, assignor to A/S Akers Mek. Verksted, Oslo, Norway

Filed May 31, 1977, Ser. No. 802,143

Claims priority, application Norway, May 31, 1976, 761844

Int. Cl.[2] F04B *49/02*

U.S. Cl. 417—53 **5 Claims**



5. A method for controlling the delivery of fluid from a piston pump which comprises a piston cylinder, a piston which is reciprocatingly movable in the piston cylinder, a fluid discharge duct, a discharge valve for controlling the discharge of fluid from the piston cylinder through a discharge aperture to the discharge duct, a fluid intake duct, an intake valve for controlling the intake of fluid from the intake duct through an air intake aperture to the piston cylinder, the method comprising

positioning a valve piston between the intake duct and the intake aperture and connecting the valve piston to the intake valve such that during the working stroke of the pump piston fluid flows out through the intake aperture and causes the valve piston to move and reposition the intake valve to close the intake aperture, and

adjusting the distance which the valve piston must be moved in order to reposition the intake valve to close the intake aperture and thus the quantity of fluid caused to flow out through the discharge aperture and through the discharge duct by regulating the amount of fluid which can freely pass from the fluid intake duct, around the valve piston and through the intake aperture when the intake aperture is open.

4,127,363

SWASH-PLATE TYPE COMPRESSOR

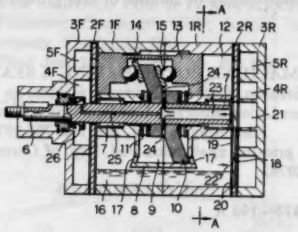
Kimio Kato; Mitsuhiro Hattori, both of Kariya, and Tsuneo Sugiura, Hekinan, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 6, 1977, Ser. No. 857,859

Claims priority, application Japan, Dec. 16, 1976, 51-169599[U]

Int. Cl.[2] F01M *1/06*; F01B *1/14*

U.S. Cl. 417—269 **6 Claims**



1. A swash-plate type compressor including a cylinder block, a pair of cylinder housings, front and rear, a pair of valve plates, an oil reservoir, a driving shaft having a swash-plate secured thereon, a plurality of pistons which are reciprocable in the axial direction within a bore formed in said cylinder block and are actuated by said swash-plate, via a shoe and a ball, to compress the refrigerant gas, said compressor comprising:

a vertical oil passage formed through said rear side valve plate having a through-bore at the lower end thereof to be communicated with said oil reservoir and a gas inducing bore disposed at a slightly higher position than the oil level in said oil reservoir; and

a longitudinal lateral passage, for the gas containing atomized oil therein, concentrically bored in said driving shaft, which lateral passage is communicated, at the rear end thereof, with the upper portion of said vertical oil passage.

4,127,364

HEAT PUMP UNIT

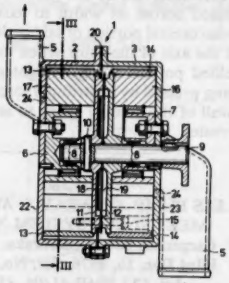
Dankwart Eiermann, and Otto Kraic, both of Lindau, Germany, assignors to Wankel GmbH, Germany

Filed Aug. 9, 1977, Ser. No. 823,135

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635971

Int. Cl.[2] F04B *35/00, 39/00*; F04C *29/04, 17/06*

U.S. Cl. 417—373 **4 Claims**



1. A heat pump unit, for circulating a medium through a temperature controlling circuit, which comprises:

a stationary housing;

compressor means arranged within said housing for compressing said medium;

expansion means arranged within said housing for reexpanding said medium, said compressor means and said expan-

sion means both being inner axle, intermeshing rotary piston engines which are arranged directly adjacent to one another and which each comprise inner side walls which are adjacent to one another and are interconnected and confine cavities therebetween;

thermal insulating means interposed between said inner side walls;

a shaft connected with both said compressor means and said expansion means, said shaft being fixedly connected to said inner side walls;

outer rotary means fixedly connected to said inner side walls;

eccentrics rigidly connected with said housing, said shaft being rotatably journalled in said eccentrics;

inner rotary means rotatably journalled about said eccentrics;

inlet means associated with said heat pump unit for supplying said medium to same; and

outlet means associated with said heat pump unit for discharging said medium from same.

4,127,365

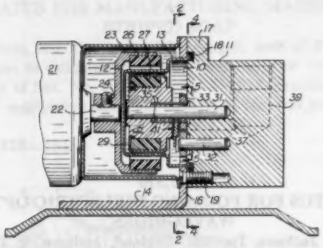
GEAR PUMP WITH SUCTION SHOE AT GEAR MESH POINT

Thomas B. Martin, Pleasant Hill, and Ferdinanders Pieters, Concord, both of Calif., assignors to Micropump Corporation, Concord, Calif.

Filed Jan. 28, 1977, Ser. No. 763,523

Int. Cl.[2] F04B *17/00;* **F01C** *1/18, 19/10;* **F04C** *1/08*

U.S. Cl. 417—420 **9 Claims**



1. A pump comprising,

means defining a pump cavity, said cavity having a wall having a planar first surface

a drive gear and a driven gear in said cavity each having planar second and third surfaces, said second surfaces bearing and sealing against said first surface, said gears meshing together at a mesh point,

means for driving said drive gear

an inlet duct in said wall adjacent said mesh point,

a concave shoe in said cavity overlying said inlet duct and a portion only of each of said gears including said mesh point,

means mounting said shoe on said wall,

said shoe having:

a planar fourth surface sealing against said first surface,

a planar fifth surface sealing against portions of said third surfaces of said gears on either side of said mesh point and

an arcuate sixth sealing surface sealing against some of the tips of both said gears adjacent said mesh point,

said fourth, fifth and sixth surfaces being located on one side only of said shoe,

and an outlet duct in said cavity remote from said shoe,

whereby said shoe, said gears and said first surface define a closed chamber around said inlet duct within said cavity.

4,127,366

FUEL INJECTION PUMP ASSEMBLY FOR DIESEL ENGINE

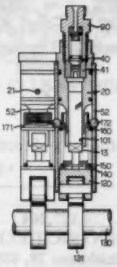
Shizuo Sumi, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 24, 1977, Ser. No. 781,005

Claims priority, application Japan, Mar. 31, 1976, 51-35603

Int. Cl.[2] F04B *7/04, 39/10*

U.S. Cl. 417—494 **2 Claims**



1. A fuel injection pump for a diesel engine comprising:

a pump housing having an upwardly opening cylindrical bore and a portion rotatably enclosing a cam shaft below said cylindrical bore, the bottom of said pump housing being blinded;

a tappet slidably disposed in said cylindrical bore and abutting at its lower end on the cam surface of said cam shaft;

a cylinder inserted into said cylindrical bore and detachably fixed to said pump housing;

a plunger reciprocally held in said cylinder;

a lower spring seat slidably disposed in said cylindrical bore and mounted on said tappet with said tappet engaging the lower end of said plunger and with the lower end of said plunger being engaged with said lower spring seat;

a spring having a lower end engaged with said lower spring seat for biasing the same downwardly, so that said plunger is also biased downwardly;

an upper spring seat disposed in said cylindrical bore for holding the upper end of said spring;

each of the outer diameters of said tappet and lower and upper spring seats being smaller than the inner diameter of said cylindrical bore; and

a pair of pins inserted into said pump housing in parallel with each other, a portion of each of said pins protruding into said cylindrical bore;

said upper spring seat being formed with bevelings for engaging the protruded portions of said pins so that movement thereof away from the said bottom of said housing is restricted by said pins, and said upper spring seat being formed with parallel flat sections, the width thereof being smaller than the distance between said pair of pins.

4,127,367

ROTARY MECHANISM WITH RESILIENT DRIVE MEANS

Russell I. Smith, 668 Rochdale Cir., Lombard, Ill. 60148

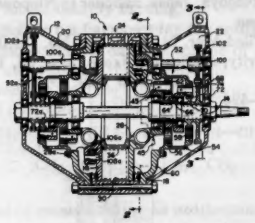
Filed Apr. 6, 1977, Ser. No. 785,305

Int. Cl.[2] F03C *3/00*

U.S. Cl. 418—36 **10 Claims**

1. A rotary motor including a casing, a pair of rotatable vaned elements in the casing, a plurality of fluid chambers between said vaned elements, each of said vaned elements having vanes which intersperse with the vanes on the other element, means to admit gas under pressure into alternate of said chambers, means to exhaust gas from alternate of said chambers, an output shaft mounted internally of said vaned elements, flexible drive means between each of said vaned elements and said output shaft, reaction means operative to

prevent relative reverse rotation of either of said vaned elements whereby gas pressure admitted will drive said vaned



elements alternately in the same direction to drive said output shaft.

4,127,368

ROTOR FOR ECCENTRIC HELICAL GEAR PUMP

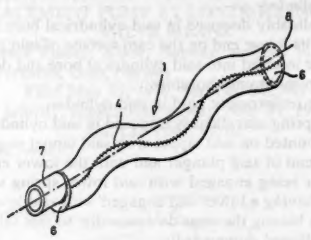
Paul G. Langer, Am Schiebhaus 28, 858 Bayreuth, Germany

Continuation of Ser. No. 226,423, Feb. 15, 1972, abandoned. This application Jul. 22, 1974, Ser. No. 490,771

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1971, 2108083

Int. Cl.[2] F01C *1/10*; B21D *39/02*; B23K *31/02*; B23P *15/10*

U.S. Cl. 418—48 **2 Claims**



1. A tempered and turned or ground hollow eccentric helical rotor for an eccentric helical gear pump comprising two deep formed matching eccentric helical rotor half-shells having a relatively thin wall thickness and having a high impact strength and abrasive resistance, said half-shells being secured together by a weld at two opposite weld lines extending along the course of the midline of said rotor and having a circular plate secured to each end by a weld and a tube stub secured by a weld to one of said circular plates, said stub being aligned with the axis of said rotor.

4,127,369

PRESSURE VALVE FOR A ROTARY PISTON COMPRESSOR

Dankwart Eiermann, and Otto Kraic, both of Lindau, Fed. Rep. of Germany, assignors to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 9, 1977, Ser. No. 823,138

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635993

Int. Cl.[2] F04C *29/08*; F04B *39/10*; F16K *15/14*

U.S. Cl. 418—270 **3 Claims**

1. In combination with a rotary piston compressor having a housing casing including side walls, a rotary piston rotatably mounted in said housing casing, and a track for engagement with and guiding said piston, said track being provided with an outlet, one of said side walls having a bore extending therethrough behind said outlet and being parallel to the axis of said compressor; a pressure valve having a substantially cylindrical cross section and being insertable into said compressor through said bore in said one side wall, a valve seat supporting said valve and including a longitudinally slotted tubular member exerting a radially outwardly directed force, said slotted tubular member comprising segmental valve opening slots extending substantially parallel to said side walls of said compressor, a thin-walled tube arranged with a precise fit in said tubular

member and having valve tongues cut from said thin-walled tube and having their roots connected to said thin-walled tube, and an additional tube inserted with precise fit in said thin-walled tube and comprising stroke-limiting tongues located behind said valve tongues and curved toward the interior of said thin-walled tube, the roots of said stroke-limiting tongues being connected to said additional tube.

4,127,370

APPARATUS FOR FORMING DIELECTRIC OPTICAL WAVEGUIDES

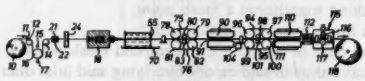
Lynden A. Jackson, Ipswich, England, assignor to The Post Office, London, England

Division of Ser. No. 686,375, May 14, 1976. This application Jul. 25, 1977, Ser. No. 818,720

Claims priority, application United Kingdom, May 14, 1975, 20345/75

Int. Cl.[2] B29D *23/04*

U.S. Cl. 425—71 **16 Claims**



1. Apparatus for coating an optical fiber comprising:

an extrusion device for extruding a sleeve of polymer;

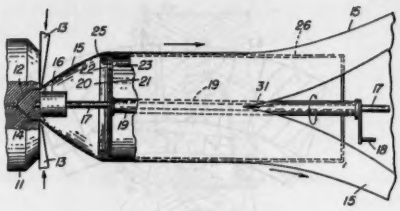
means for feeding the fiber through said extrusion device into the center of the sleeve as the sleeve is extruded, the sleeve having an internal diameter substantially greater than the fiber; and

drawing means downstream of said extrusion device contacting the outer surface of said sleeve for reducing the internal diameter of said sleeve to a point where there is a small but distinct clearance between the fiber and the inner surface of the sleeve permitting relative axial movement therebetween.

4,127,371
APPARATUS FOR THERMOPLASTIC FOAM EXTRUSION

Vinod K. Luthra, East Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 675,384, Apr. 9, 1976, Pat. No. 4,049,768. This application May 12, 1977, Ser. No. 796,092
Int. Cl.² B29D *27/00*
U.S. Cl. 425—72 R 1 Claim

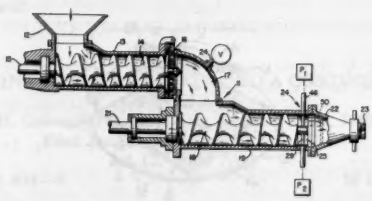


1. In an apparatus for the surface treatment of extruded thermoplastic foam tubes comprising an internal air nozzle and an external air ring mounted adjacent to a tubular extrusion die orifice, the improvement which comprises an internal mandrel provided downstream of said die orifice said mandrel being provided with a radial aperture acting as an air vent, said air vent having adjusting means to control the air flow through the air vent and thus within said foam tube, such a control means being adjustable while such a foam tube is being extruded from said die orifice.

4,127,372
APPARATUS FOR MANUFACTURING MARBLED AND STRIPED SOAP

Giulio Perla, and Alessandro D'Arcangeli, both of Rome, Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 466,690, May 3, 1974, abandoned. This application Mar. 18, 1976, Ser. No. 668,248
Int. Cl.² B29F *3/12*
U.S. Cl. 425—131.1 4 Claims

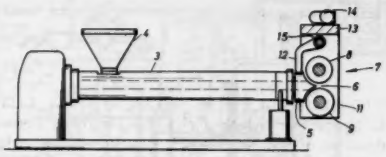


1. Apparatus for making striped or variegated soap comprising a plodder containing a rotatable worm for working soap of one predominant color to form a continuous plastic stream and extruding said stream as a solid billet of predetermined cross section, means for injecting colored liquid into the soap stream prior to extrusion comprising an annular hollow member surrounding the path of the soap stream and a plurality of hollow members mounted on and extending substantially radially inwardly from said annular member across the stream downstream of the end of said worm, means whereby said annular member is connected to at least one source of liquid colored differently from said predominant color, and means defining a series of downstream facing discharge nozzle openings in each of said hollow members, each of said hollow members being generally triangular with smooth rounded corners in cross section with the apex facing downstream and formed with said nozzle openings, and the sides of said hollow members smoothly symmetrically converging toward the apex so that the soap in said stream parted by said members during passage flows along said sides to rejoin while directly encompassing the colored liquid emerging from said nozzle openings.

4,127,373
EXTRUDER AND TWIN ROLLER CALENDERING PLANT

Dietmar Anders; Wilhelm Brand, both of Hannover, and Manfred Dienst, Burgdorf, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover, Fed. Rep. of Germany

Filed Jun. 7, 1977, Ser. No. 804,453
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625737
Int. Cl.² B29F *3/012*
U.S. Cl. 425—192 R 5 Claims



1. In an extruding and twin roller calendering plant formed with an extruder nozzle head for producing films of elastomeric material, the invention comprising:

(a) a separate calender frame;

(b) a pair of calendering rollers mounted on said frame, said rollers being spaced to form a gap into which is directed said nozzle head when said frame is in a calendering position;

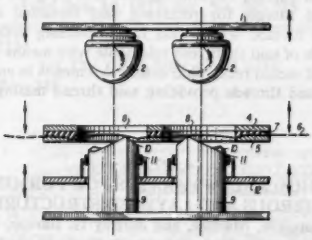
(c) means for pivotally mounting said frame for movement between said calendering position and a second position away from said nozzle head to allow ready access to said nozzle head, and

(d) a compensating weight on said calender frame on an opposite side of said pivotal mounting to said rollers to counter balance the weight of said rollers.

4,127,374
APPARATUS FOR MANUFACTURING THE CUPS OF A BRASSIERE FROM A FABRIC OF SYNTHETIC MATERIAL

Thomas C. M. Ammerlaal, Zandweg 115, Wormer, Netherlands

Filed Mar. 7, 1977, Ser. No. 775,223
Int. Cl.² B29C *17/03, 17/14*
U.S. Cl. 425—289 5 Claims



1. Apparatus for manufacturing the cups of a brassiere from a fabric of synthetic material comprising:

a single mold member contoured according to the desired contour of the cup,

a tube-shaped element comprising a rim member having a three-dimensional configuration on the surface thereof facing said contoured mold member,

means for clampingly supporting a web of the fabric in a

stretched and non-planar condition between said mold and rim members,

whereby movement of said mold member and said rim member together with said fabric web interposed therebetween causes said fabric to conform in shape over its major portion to the shape of said mold member and causes its rim portion to conform to the non-planar shape of said rim member.

4,127,375

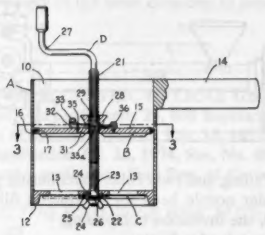
DISPENSING DEVICE

Jacob T. Nelson, 105 W. Lee Rd., Taylors, S.C. 29682

Filed Dec. 17, 1976, Ser. No. 751,582

Int. Cl.[2] A21C *11/10*

U.S. Cl. 425—313 **4 Claims**



1. A dough dispensing device for rapidly dispensing a plurality of uniform dough masses comprising:

a dough containing chamber having an inlet adjacent one end for receiving dough to fill said chamber and a dough dispensing outlet carried adjacent the opposing end thereof;

lid means carried coextensive with the interior of said dough chamber and axially movable therein toward said dispensing outlet for aiding the flow of dough therethrough;

separator means movable transversely relative to said dispensing outlet including a rotatable blade for severing dough passing therethrough to form a separated dough mass;

drive means providing synchronized axial movement of said lid means and rotational movement of said blade so that a predetermined amount of dough is severed and dispensed;

said drive means includes a rotatable threaded shaft carried centrally in said dough chamber;

releasable connector means carried by said lid means threadably mating with the threads of said shaft causing said lid means to travel the length of said shaft when rotated; and

said releasable connector means including a central hub portion carried on said lid means having an axial bore formed therein for receiving said threaded shaft, slot means formed within said hub providing access to the threads of said shaft, and releasable wire means carried on said lid means receivable in said slot means in engagement with said threads providing said thread mating relationship.

4,127,376

METHOD AND APPARATUS FOR FORMING A FIBROUS AND LAYERED STRUCTURE

John F. Ratcliffe, Marlow, and Jeffrey G. Barker, High Wycombe, both of England, assignors to Ranks Hovis McDougall Limited, London, England

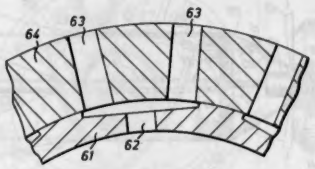
Filed Sep. 2, 1976, Ser. No. 720,099

Claims priority, application United Kingdom, May 25, 1976, 21620/76

Int. Cl.[2] A23P *1/00*; B29F *3/02*

U.S. Cl. 425—380 **6 Claims**

1. Apparatus for forming a proteinaceous mass into a fibrous and layered structure, comprising a housing defining an axially elongated bore, a helical conveyor rotatable in said bore for feeding the mass toward a downstream end of said housing, die structure at the downstream end of said housing and including an axially elongated annular member communicating with said housing bore and defining radially outwardly open slots the inner ends of which slots communicate with the interior of said annular member said die structure further including an outer member having an internal elongated cylindrical surface mating with said annular member's external surface, said mating surfaces having means cooperating to define restrictive extru-



sion passageways which are oriented generally circumaxially and which passageways communicate with the outer ends of said radially outwardly open slots, said outer member defining openings communicating with said extrusion passageways and having cross sectional areas related to the areas of said passageways such that the proteinaceous mass is extruded from each of said passageways in a ribbon, which ribbon is folded upon itself in each of said openings, said openings being oriented radially and perpendicular said circumaxially extending mating surfaces.

4,127,377

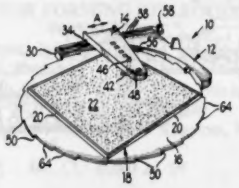
STAMP DESIGN KIT

Floyd E. Schlau, East Greenwich, R.I.; Harry Disko, South Barrington, and Derek A. Brand, Naperville, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 14, 1977, Ser. No. 767,396

Int. Cl.[2] B28B *1/00*

U.S. Cl. 425—385 **24 Claims**



1. A kit for impressing designs in a moldable material, comprising:

a base;

a receptacle on said base for receiving a batch of moldable material;

a selectively movable support arm;

means for mounting said support arm on the base for longitudinal movement relative to the receptacle and for pivotal movement between a first position spaced from said receptacle to permit loading the receptacle with said moldable material and a second position adjacent the receptacle;

a plurality of impression forming members, each having a generally planar contact surface; and

means for removably mounting an impression forming member on said support arm for movement therewith and for contacting the moldable material on the receptacle to impress a design in the moldable material when the support arm is in said second position.

4,127,378

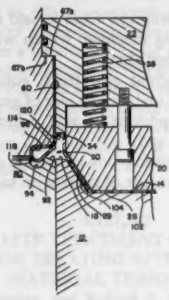
APPARATUS FOR COLD-FORMING PLASTIC SHEET

William R. Meadors, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Continuation of Ser. No. 759,634, Jan. 17, 1977, abandoned, which is a division of Ser. No. 619,377, Oct. 3, 1975, abandoned. This application Nov. 17, 1977, Ser. No. 852,249

Int. Cl.[2] B29C *17/00*

U.S. Cl. 425—398 6 Claims



4. An apparatus for cold-forming a buckled region intermediate the opposite edges of a skirt, said apparatus comprising means providing an outer wall against which said skirt is disposed, means for providing an inner wall disposed opposite said outer wall and against said skirt, means for holding one of said opposite edges against movement relative to said outer wall, means providing a void in said inner wall, said void opening toward said outer wall, said void having a tapered surface for engaging the other of said opposite edges, and means for moving said inner wall to move said other edge toward said one edge and buckle said intermediate region into said void, said tapered surface facing radially outwardly and axially toward said means holding said one edge to prevent radially inward curling deflection of said other edge, said tapered surface terminating at its radially outer extent adjacent said outer wall and at its radially inner extent remote from said outer wall.

4,127,379

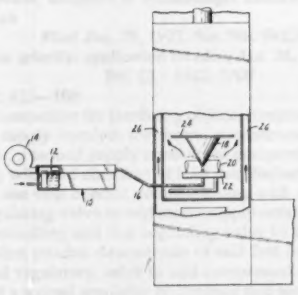
FEEDING WATER-LADEN AIR INTO A CONTINUOUS OPEN FLAME

Leslie H. Grove, 707 E. Hoyt Ave., St. Paul, Minn. 55106

Filed Jan. 13, 1977, Ser. No. 759,102

Int. Cl.[2] F23J *7/00*

U.S. Cl. 431—4 10 Claims



1. Method of improving the efficiency of a continuous open flame comprising feeding water-laden air of at least 70% relative humidity directly into the flame at a controlled rate such that the oxygen of the water exceeds 5% of the oxygen theoretically required for complete combustion.

4,127,380

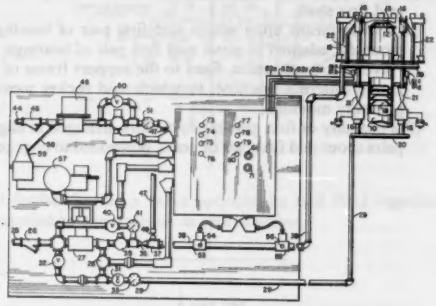
IGNITION SYSTEM FOR WASTE GAS FLARES WITH GAS COMPENSATION

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Aug. 18, 1977, Ser. No. 825,522

Int. Cl.[2] F23D *13/20*

U.S. Cl. 431—15 15 Claims



1. An ignition system for flares comprising

a pilot for igniting gas discharged from the flare,

an igniter pipe extending to said pilot for igniting said pilot,

means for supplying air under pressure,

means for supplying fuel gas for delivery to said pilot,

an ignition coupling to which a mixture of fuel gas from said source of gas and air from said means for supplying air are delivered and which is connected to said ignition pipe,

means for igniting the gas-air mixture at said ignition coupling for delivery of an igniter flame through said igniter pipe to said pilot,

flame sensing means for said ignition pipe, and

means upstream of said ignition coupling for controlling the ratio of fuel gas to air responsive to said flame sensing means.

4,127,381

APPARATUS FOR COMPENSATING FOR CHANGE IN THE LENGTH OF THE PALLET TRAIN OF A STRAND SINTERING MACHINE

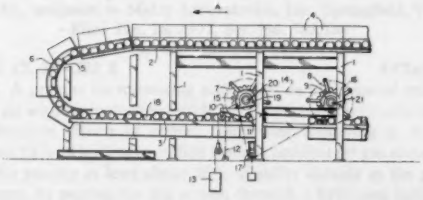
Erich Wiemer, Essen, Fed. Rep. of Germany, assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 10, 1977, Ser. No. 805,285

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627234

Int. Cl.[2] F27D *3/00*; C21B *1/18*

U.S. Cl. 432—245 3 Claims



1. Apparatus for compensating for the change in length of the pallet train in a strand sintering machine and for aligning pallets thereon, said strand sintering machine which includes a

parallel rail system formed into an upper trackway and a lower trackway, joined by two arcuate sections of trackway, pallets having gear pockets therein, and a set of gear toothed sprockets arranged adjacent to one of said arcuate sections of trackway for motivating said pallets around said trackway, the other arcuate section of trackway being the discharge end, comprising:

(a) a first pair of gears positioned above the lower trackway of and adjacent to the discharge end of said strand sintering machine;

(b) a first shaft to which said first pair of gears is fixed to form a common axis of rotation for said first pair of gears;

(c) a first pair of bearings within which is rotatably mounted said first shaft;

(d) rocker means upon which said first pair of bearings is mounted, adapted to pivot said first pair of bearings;

(e) pivotal journal means, fixed to the support frame of said strand sintering machine, to which said rocker means is pivotally mounted;

(f) a plurality of first gear teeth; equally arranged in aligned pairs about said first pair of gears, positioned to engage the gear pockets of said pallets of said strand sintering machine;

(g) force means acting upon said rocker means causing said gear teeth to align said pallets upon said lower trackway of said strand sintering machine;

(h) a second pair of gears, located downstream from said first pair of gears;

(i) a second shaft to which said first pair of gears is fixed to form a common axis of rotation of said second pair of gears;

(j) a second pair of bearings, fixed to said support frame of said strand sintering machine, within which is rotatably mounted, said second shaft;

(k) a plurality of second gear teeth, equally arranged in aligned pairs about said second pair of gears, positioned to engage said gear pockets of said pallets of said strand sintering machine; and

(l) means for transmitting power which synchronizes the rotation of said first pair of gears with said second pair of gears.

4,127,382

PROCESS FOR THE REDUCTION OF FREE FORMALDEHYDE ON TEXTILE FABRICS

Ronald S. Perry, 6 Connecticut Ave., Barrington, R.I. 02806

Filed Apr. 21, 1977, Ser. No. 789,362
Int. Cl.[2] D06M *13/34*
U.S. Cl. 8—181 27 Claims

1. A process of reducing free formaldehyde to less than about 1000 ppm formaldehyde on cellulosic-containing methylol-treated material, which process comprises contacting the material, containing the formaldehyde, with an aqueous solution having an effective amount of less than about 2 percent by weight of a free-formaldehyde scavenger compound which comprises a heterocyclic ring compound free of a carbonyl group, and containing an NH group, with the ring made up of nitrogen or carbon atoms, the ring being unsaturated or, when fused to a phenyl group, being unsaturated or saturated, and the NH group bonded to a carbon or a nitrogen atom, which atom is directly bonded by a double bond to another carbon or nitrogen atom.

4,127,383

FOAMING WASTE TREATMENT COMPOSITION AND METHOD FOR TREATING NITROGENOUS WASTE MATERIAL THEREWITH

F. Bertram Johnston, and Roland S. Grybek, both of Tampa, Fla., assignors to Graham-White Sales Corporation, Salem, Va.

Filed Jun. 10, 1977, Ser. No. 805,515
Int. Cl.[2] A61L *9/01;* B01J *1/18*
U.S. Cl. 422—5 9 Claims

1. A foaming waste treatment composition for stabilization of amine and the proteinaceous components thereof comprising about 15 to 85% by weight of a salt of a lignosulphonic acid and about 1 to 5% by weight of a mixture of surfactant of a member selected from the group consisting of alkyl aryl sulfonate and alkylphenoxy polyethoxy ethanol and a foam-generating member selected from the group consisting of sodium lauryl sulfate, coconut oil acid ester, a sulfated alkoxylated primary alcohol salt, a sulfated alkyl alcohol alkoxylate, alkoxylated adduct of an alkyl aryl sulfonate alkanolamide, salt of a sulfated polyglycol ether.

2. The waste treatment composition of claim 1 further including a foam stabilizer selected from the group consisting of sodium carboxymethyl cellulose, sodium alkyl sulfosuccinate, fatty acid amine condensate, hydroxyethyl cellulose and cellulose.

7. A method for treating nitrogenous waste material comprising spraying a foamable dilute solution of the composition of claim 2 onto the surface of said waste material.

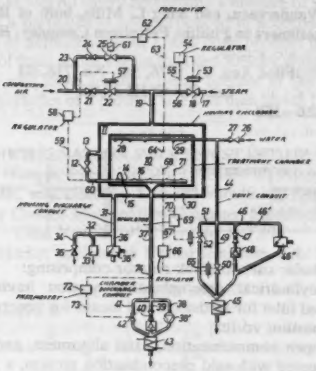
4,127,384

AUTOCLAVE FOR STERILIZING OBJECTS

Hans A. Fahlvik, Sloinge, and Kurt E. Sandquist, Getinge, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jan. 25, 1977, Ser. No. 762,345
Claims priority, application Sweden, Jan. 26, 1976, 7600740
Int. Cl.[2] A61L *3/00*
U.S. Cl. 422—109 7 Claims

1. An autoclave for sterilizing objects comprising a chamber, a first supply conduit for steam communicating with said chamber, a second supply conduit for compressed air communicating with said chamber, at least one discharge conduit and at least one vent conduit communicating with said chamber, a first regulating valve in said steam supply conduit, a first regulator controlling said first regulating valve by the temperature in said first conduit downstream of said first regulating valve, a second regulatory valve in said compressed air supply conduit and a second regulator controlling said second regulatory valve by means of the temperature in said chamber, a by-pass conduit for said air supply conduit having a bypass valve, a pressostat operating said bypass valve and being controlled by pressure present in said chamber, said vent conduit and discharge conduit each being provided with a throttle for constant flow therethrough, and a third regulator, said vent conduit further having a valve operated by said third regulator controlled by the pressure in said chamber.



4,127,385

ASSAY OF ANTIBODIES WITH ANTIGEN-TREATED ALUMINUM HYDROXIDE GEL

Bent Weeke, Tølløsevej 20, DK-2700 Brønshøj, Denmark

Filed May 27, 1976, Ser. No. 690,445
Claims priority, application Denmark, Jun. 10, 1975, 2598/75
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B 1 Claim

1. A method of detecting or determining antibodies in body fluids comprising:

(a) providing an aluminum hydroxide gel previously contacted with antigen for which said antibodies are specific;

(b) contacting a sample of the body fluid with the antigen-treated aluminum hydroxide gel of a) so that, if said specific antibodies are present in the body fluid, antigen-antibody complex will form on said antigen-treated gel;

(c) contacting the aluminum hydroxide gel resulting from b) with labeled anti-antibodies specific to said antibodies;

(d) measuring the amount of labeled anti-antibodies bound to any antigen-antibody complex formed on the aluminum hydroxide gel as a result of (c); and

(e) correlating the measurement of (d) to the presence of any said specific antibodies in the body fluid.

4,127,386

PROCESS AND SYSTEM FOR MEASURING SULFUR DIOXIDE POLLUTION

Quade R. Stahl, Springfield, Va., and Joseph H. Ney, Rockville, Md., assignors to Meloy Laboratories, Inc., Springfield, Va.

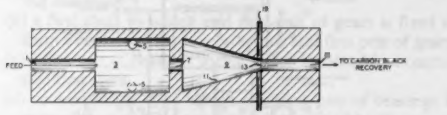
Filed Jan. 26, 1977, Ser. No. 762,736
Int. Cl.[2] G01N *31/06*
U.S. Cl. 23—232 R 9 Claims

1. A process for measuring sulfur dioxide pollution of ambient air without hydrogen sulfide interference and with minimal deleterious effects of ozone, comprising removing at least about 98% of hydrogen sulfide from an ambient air gas stream, while passing at least about 98% of sulfur dioxide in the gas stream, by passing the gas stream through a hydrogen sulfide scrubber containing a bed of silver sulfate without pretreatment of the gas stream or the bed by drying or heating, and then passing the gas stream from the scrubber to an instrument for measuring sulfur dioxide.

4,127,387
RADIAL SECONDARY GAS FLOW CARBON BLACK REACTOR

John W. Vanderveen, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 27, 1976, Ser. No. 718,301
Int. Cl.[2] C01B 31/02
U.S. Cl. 422—158 3 Claims

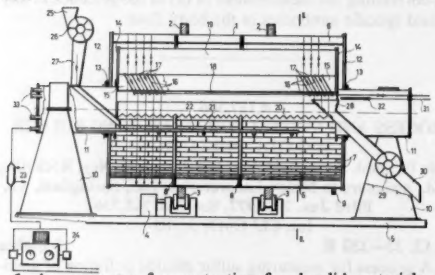


1. A tubular carbon black reactor comprising:
(a) a cylindrical precombustion section having axially aligned inlet for feedstock and means for generating a hot combustion vortex;
(b) in open communication, axial alignment, and operably connected with said precombustion section, a passage of abruptly restricted dimensions;
(c) in open communication, axial alignment, and operably connected with said passage, a frustoconical, venturi converging section abruptly expanding to diameter equal to that of said precombustion section and extending away from said passage at a converging angle between the frustoconical surface and the reactor axis of about 10° to about 30°, said converging section terminating in open communication with an axially aligned reaction tube section;
(d) a reaction tube section of diameter equal the least diameter of said converging section;
(e) means for radially introducing opposing combustion gas streams into said converging section at the inlet to the reaction tube section; and
(f) a source of combustion gas connected to supply said means of (e).

4,127,388
APPARATUS FOR CONTACTING FUSED SOLID MATERIALS WITH SOLID, LIQUID OR GASEOUS MATERIALS

Gábor Maczkó; Dezsö Tóbias; László Bozzay; Miklós Takács, and Rudolf Kövesdi, all of Tiszavasvári, Hungary, assignors to Alkaloida Vegyészeti Gyár, Tiszavasvari, Hungary

Filed Aug. 11, 1976, Ser. No. 713,498
Claims priority, application Hungary, Aug. 11, 1975, AA 820
Int. Cl.[2] B01D 11/02
U.S. Cl. 422—258 5 Claims

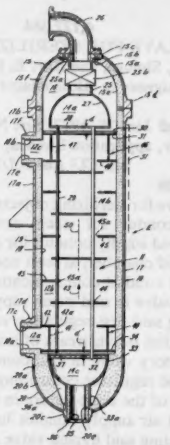


1. An apparatus for contacting fused solid materials with solid, liquid or gaseous materials, including active ingredients, having different specific weights, and for extracting vegetable materials, comprising, in combination: an outer rotary drum having a longitudinal axis, an interior wall and longitudinal baffles along beams that extend axially within said wall; said drum being supported for rotation; coaxially fixed consoles joined in a liquid- and gas-tight manner to respective faceplates of said drum; said consoles lodging a feeding mechanism and a removing device; a diverter baffle system mounted from said consoles throughout the interior of said rotary drum, constituted by an inner stationary drum also having an interior wall; a slanting lapping being formed in a section of said stationary drum, resting on said consoles, following the topmost generatrix of said interior wall of the stationary drum; pivotable diverting baffles arranged along said lapping; an open-bottom trough disposed above said diverting baffles for collecting the processed materials in an intermediate stage of the contacting process; an inverted V-shaped baffle plate dividing the stream of the materials descending from said trough between and through said diverting baffles; a removal line forming part of said removing device; said diverting baffles being mounted on said stationary drum, in which the diameter of a cylindrical portion is nearly identical with that of a rotational envelope constituted by outer edges of said longitudinal baffles, an upper edge of said lapping being near said topmost generatrix, while its lower edge is above a liquid level, determined by the location of said removal line, at a distance equal to at least that between two adjoining ones of said longitudinal baffles; means for producing a horizontally and vertically continuous curtain-like material advancement of a substantially uniform thickness, along the entire inner drum length, to allow the active ingredients to be atomized onto the curtain-like material, constituted by parts of said longitudinal baffles that successively apply the materials, said trough in which the materials are collected in the intermediate stage, said diverting baffles that allow a uniform material stream to be produced, and of said baffle plate where the material stream is divided; means for forcing the materials to follow a path conducive to intimate contacting and intermixing regardless of their different specific weights, during the continuous curtain-like advancement, and for forcing them below said liquid level with each revolution of said rotary drum, the materials being prevented from exiting from between said longitudinal baffles, constituted by parts of the latter closely contacting said stationary drum, said lower edge of said lapping above the liquid level leading the materials to reach the spaces between said longitudinal baffles, to force them to drop below said liquid level; and means for guiding the moistened materials to slide down on said lapping, on account of gravity, and on axial pushing by said longitudinal baffles, constituted by the arrangement of said upper edge of the lapping near said topmost generatrix where said longitudinal baffles are given a vertical position.

4,127,389
EXCHANGER REACTOR

Larry G. Hackemesser, and Robert B. Petru, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 4, 1977, Ser. No. 784,302
Int. Cl.[2] B01J 3/00, 8/06; F28F 9/02, 9/22
U.S. Cl. 422—201 10 Claims



1. Apparatus comprising:
a generally cylindrical hollow shell assembly including a

main heating chamber, a shell inlet chamber and a shell outlet chamber for directing a heating fluid through said heating chamber;

a tube bundle assembly mounted in and separate from said shell assembly;

inlet means and outlet means for directing a process fluid to be heated through said tube bundle assembly;

said tube bundle assembly including

(a) a tube inlet chamber formed by a generally hemispherically-shaped inlet section attached to an inlet tube sheet extending transversely across said hemispherically-shaped inlet section and connected to said inlet means,

(b) a tube outlet chamber formed by a generally hemispherically-shaped outlet section attached to an outlet tube sheet extending transversely across said hemispherically-shaped outlet section and connected to said outlet means;

(c) a plurality of tubes which extend between said inlet tube sheet and said outlet tube sheet so as to be positioned in said shell main heating chamber, and

(d) expansion means positioned between said inlet means and said inlet chamber for providing relative movement between said shell assembly and said tube bundle assembly;

a radial flow inlet distributor means positioned between said shell inlet chamber and said main heating chamber for initially distributing heating fluid radially inwardly from said shell inlet chamber into said main heating chamber; and

a radial flow outlet distributor means positioned between said shell outlet chamber and said main heating chamber for distributing heating fluid radially outwardly from said main heating chamber into said shell outlet chamber.

4,127,390

HYDRODESULFURIZATION OF COAL AND THE LIKE

Michael A. Dondelewski, Grove City, Pa., assignor to Coalmet Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1977, Ser. No. 827,450

Int. Cl.[2] C10L *9/10;* **C10B** *57/00*

U.S. Cl. 44—1 R **4 Claims**

1. A method of treating coal to reduce total sulfur content consisting of

a. crushing and sizing the coal to a more or less homogenous size,

b. combining the coal with a sodium chloride brine solution,

c. heating the coal in the sodium chloride solution to at least the boiling point of water,

d. holding the coal in the heated brine solution at a moderately elevated temperature and pressure for a period of time,

e. removing the coal from the brine solution and washing with hot water, and

f. recovering coal having a reduced sulfur and ash content.

4,127,391

PROCESS FOR MAKING COKE FROM BITUMINOUS FINES AND FUELS PRODUCED THEREFROM

Edward Koppelman, 4424 Bergamo Dr., Encino, Calif. 91316

Continuation-in-part of Ser. No. 648,170, Jan. 12, 1976, Pat. No. 4,052,168. This application Sep. 7, 1977, Ser. No. 831,342

The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.

Int. Cl.[2] C10L *1/32, 9/08;* **C10B** *53/00*

U.S. Cl. 44—51 **21 Claims**

1. A process for converting bituminous fines into a useful solid fuel which comprises the steps of charging a feed material comprising bituminous fines into an autoclave, heating said feed material to an elevated temperature of at least about 750° F. up to about 1250° F. and pressure of at least about 1000 psi for a period of time sufficient to convert any moisture present and at least a portion of the volatile organic constituents therein into a gaseous phase and to effect a partial thermal restructuring of the chemical structure thereof and a change in its chemical composition to produce an agglomerated solid reaction product, and thereafter cooling said reaction product and recovering the upgraded solid coke product.

21. A liquid fuel oil slurry comprising a mixture of a residual fuel oil and a particulated coke produced in accordance with the process as defined in claim 1, said coke product present in an amount of from about 1% up to about 50% by weight of the fuel slurry, said coke product being present in the form of suspended particles of a particle size less than about 150 mesh.

4,127,392

METHANATION PROCESS START-UP

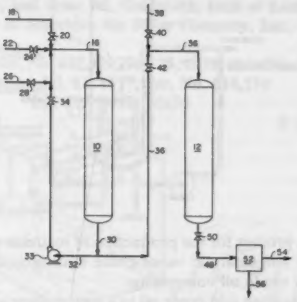
William B. Watson, Pittsburgh, Pa.; Richard G. Winter, Ponca City, Okla., and Geoffrey Twizell, Middlesex, England, assignors to Conoco Methanation Company, Stamford, Conn.

Filed Nov. 2, 1977, Ser. No. 847,998

Claims priority, application United Kingdom, Feb. 27, 1977, 7398/77

Int. Cl.[2] C10K *3/04*

U.S. Cl. 48—197 R **8 Claims**



1. A start-up method for a multi-stage methanation process wherein a methanation catalyst comprising nickel supported on a suitable catalyst carrier is used in a plurality of methanation catalyst beds, said method consisting essentially of sequentially:

(a) heating a first methanation catalyst bed to a temperature greater than 400° F.;

(b) charging a first mixture containing a synthesis gas stream comprising carbon oxides and hydrogen in mixture with an inert diluent stream to said first heated catalyst bed, said synthesis gas being mixed with said inert diluent stream in an amount fixed by the upper temperature limits in the catalyst bed;

(c) recovering a first reaction product stream from said first catalyst bed;

(d) recycling at least a portion of said first reaction product stream back to (b) as at least a portion of said inert diluent stream;

(e) gradually adjusting the amount of synthesis gas and inert diluent charged to said first catalyst bed until the temperature of said catalyst bed reaches a desired maximum temperature;

(f) maintaining the hydrogen content of said mixture at an amount such that said first reaction product stream contains at least about 10 volume percent unreacted hydrogen;

(g) charging at least a portion of said first reaction product stream containing at least about 10 volume percent unreacted hydrogen to a second catalyst bed to heat said second catalyst bed;

(h) recovering a second reaction product stream from said second catalyst bed; and,

(i) reducing the hydrogen content of said second reaction product stream to less than five volume percent after both said first catalyst bed and said second catalyst bed are above a desired minimum temperature. whereby said methanation process start-up is effected without the formation of nickel carbonyl and without carbon deposition on the catalyst.

4,127,393
METHOD AND APPARATUS FOR VAPORIZING HYDROCARBON BASED LIQUIDS

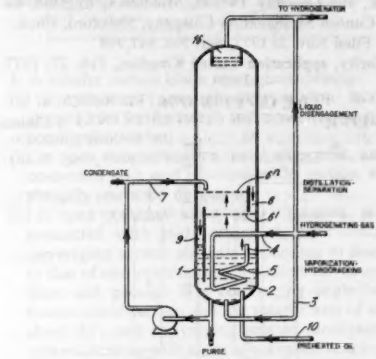
Cyril Timmins, Winchester; Henry L. Conway, and Henry J. F. Stroud, both of Solihull, all of England, assignors to British Gas Corporation, London, England

Continuation of Ser. No. 647,204, Jan. 7, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,726

Claims priority, application United Kingdom, Jan. 13, 1975, 01289/75

Int. Cl.[2] C07C *9/04*; C10C *13/30*

U.S. Cl. 48—213 **9 Claims**



7. A process for the production of methane-containing gases by the non-catalytic vapor-phase hydrogenation of whole or topped crude oil comprising:

pre-heating said crude oil to a temperature which is less than the temperature at which decomposition of said crude oil occurs;

introducing said pre-heated crude oil into the lower end of a vessel to form a main mass of crude oil;

introducing a first hydrogen-containing gas stream pre-heated to a temperature greater than that of the main mass of crude oil into said main mass with turbulent mixing sufficient to entrain oil in a rising stream comprising said gas and vaporized components of said oil;

passing a second hydrogen-containing gas stream pre-heated to a temperature greater than that of the main mass of crude oil in indirect heat exchange with said main mass in said vessel and thereafter into admixture with said rising stream of said gas, vaporized components, and entrained oil to pass upwardly therewith in said vessel;

contacting said rising stream of said gas, vaporized components, and entrained oil with a solid surface located in said vessel above said main mass to remove entrained oil from the rising stream;

returning the removed oil to the main mass of oil undergoing vaporization;

withdrawing from the vessel the rising stream of gas and vapor from which said entrained oil has been removed; and

subjecting the withdrawn gas and vapor to a non-catalytic hydrogenation reaction at a temperature of not greater than 950° C.

4,127,394
METHOD AND APPARATUS FOR DEAERATION OF A LIQUID COMPOSITION

Karel E. Verhille, Hoboken, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

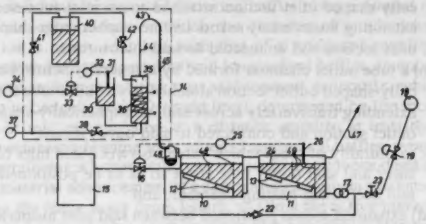
Filed Jun. 9, 1977, Ser. No. 805,019

Claims priority, application United Kingdom, Jun. 11, 1976, 24402/76

Int. Cl.[2] B01D *51/08*

U.S. Cl. 55—15 **17 Claims**

1. In a method for continuously degasifying a liquid composition including at least one liquid and having a gas entrained therein, by feeding the liquid composition through a degasifying chamber at a rate such that the level of the upper surface of the composition remains spaced away from the upper extremity of the chamber, and subjecting said liquid composition while in said chamber to ultrasonic vibration, thereby to move at least some of the entrained gas in the liquid composition upwardly towards the free surface of said composition in said chamber with a consequential formation of a head of foam above said free surface, the improvement of controlling the



formation of said foam head at the free surface of said composition in said chamber, by maintaining at the free surface of the liquid composition in said chamber a vapour current of at least one of the solvents contained in the liquid composition, said current containing at least one compound in vapour phase that has a foam-stability reducing action on the foam formed at the free surface of the composition during the ultrasonic treatment, the temperature of said vapour current being such that no cooling of the liquid composition occurs.

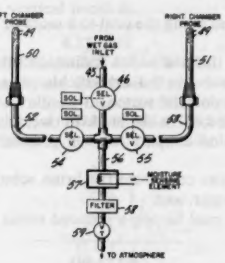
4,127,395
ADSORBENT FRACTIONATOR WITH FAIL-SAFE AUTOMATIC CYCLE CONTROL AND PROCESS

Paul M. McKey, Cortland, and Niels C. Jensen, Jr., Marathon, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 18, 1976, Ser. No. 734,471

Int. Cl.[2] B01D *53/04*, *53/30*

U.S. Cl. 55—20 **18 Claims**



1. A process for reducing the concentration of water vapor in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, which comprises

(1) passing the gaseous mixture in contact with and from one end to another end of a bed of a sorbent having a preferential affinity for the water vapor;

(2) adsorbing water vapor thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration gradient of water vapor in the bed progressively decreasing from one end to the other end as the adsorption continues, and an increasing concentration of water vapor in the second gas defining a concentration front progressively advancing in the bed from the one end to the other end as sorbent capacity therefor decreases;

(3) detecting the advance of substantially the leading edge of the front in the bed by sampling the gaseous mixture in the

bed and sensing, in a sensor, such sample as wet or dry with respect to a predetermined limiting water vapor content thereof at a predetermined point in the bed sufficiently far from the end of the bed to prevent the front from leaving the bed;

(4) from time to time sampling wet gas from the dryer inlet, passing such sample to the sensor and noting from the sensing response whether the gas is sensed as wet or dry;

(5)(a) if the gas is sensed as wet, continuing to pass the gaseous mixture in contact with the bed of sorbent, detecting the advance of substantially the leading edge of the front in the bed by sampling the gaseous mixture in the bed and sensing as wet or dry with respect to a predetermined limiting water vapor content thereof at a predetermined point in the bed sufficiently far from the end of the bed to prevent the front from leaving the bed, and then discontinuing passing the gaseous mixture in contact with the bed before the front can leave the bed and the limiting maximum concentration of water vapor in the second gas can be exceeded; and

(5)(b) if the gas is sensed as dry, discontinuing passing the gaseous mixture in contact with the bed before the front can leave the bed without actuation of the sensor.

11. Apparatus for reducing concentration of water vapor in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, comprising, in combination, a vessel; a chamber therein for a bed of sorbent having a preferential affinity for the water vapor; a line for delivering effluent gas from an outlet end of said bed; probe means in the bed in a position to sample the gas for sensing of water vapor content thereof to detect substantially the leading edge of the front at a predetermined point sufficiently far from the end of the bed to prevent the leading edge of the front from leaving the bed; sensor means in gaseous flow connection with the probe, and giving a signal in response thereto, at such predetermined concentration of water vapor; means for closing off the influent flow of gas in response to the signal; a line for delivering wet influent gas to the sensor means; valve means for closing off the line to flow of wet influent gas to the sensor means; means for opening the valve means from time to time to allow such flow to the sensor, for determining the capability of the sensor means for detecting water vapor contained there; and means for signalling when the sensor does not sense as wet such wet influent gas.

4,127,396

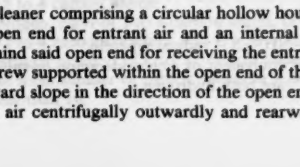
AIR PRE-CLEANER

Domenic P. Tortorici, South Holland, and Demetrios A. Tsengouras, Park Forest, both of Ill., assignors to Halle Industries, Inc., New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 820,010

Int. Cl.[2] B01D *45/16*

U.S. Cl. 55—396 **4 Claims**



1. A pre-cleaner comprising a circular hollow housing presenting an open end for entrant air and an internal receiving chamber behind said open end for receiving the entrant air, an air feeder screw supported within the open end of the housing on a downward slope in the direction of the open end so as to feed entrant air centrifugally outwardly and rearwardly into said receiving chamber, an annular baffle at the rear of said chamber so supported within the housing as to define an annular space through which the centrifuged air may pass rearwardly, a funnel-shaped wall having an outer edge fitted to the inside diameter of the housing behind the baffle and defining therewith an annular expansion chamber into which the dirt-laden air is swept with consequent loss of velocity and settling of the dirt entrained therein, said funnel-shaped wall having an open forward edge so as to define an outlet duct for the cleaner air in the center of the receiving chamber and a curved wall at the rear of the expansion chamber to reduce eddy currents in the expansion chamber, and means communicating with said expansion chamber to enable dirt to be removed from the expansion chamber.

4,127,397

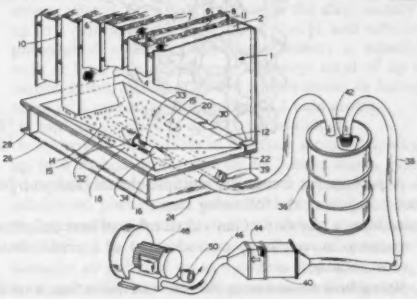
DISCHARGE APPARATUS FOR FILTER ASSEMBLY FOR RADIOACTIVE CONTAMINANTS

Alex O'Nan, Jr., and Jesse M. Goldsmith, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Continuation of Ser. No. 617,329, Sep. 29, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,174

Int. Cl.[2] B01D *46/30*

U.S. Cl. 55—479 **3 Claims**



1. A filter assembly for removal of radioactive contaminants in a gas stream and filter material discharge apparatus comprising: a housing with a bottom and a top with a gas inlet in the front wall of said housing and an outlet in the back wall of said housing and a plurality of filter beds having filter material therein in fluid communication with said gas inlet and outlet, said filter beds being in open communication with said bottom of said housing, each of said filter beds including an impervious vertically extending front wall member connected at opposed outer edges to a pair of spaced foraminous outer side members with a pair of spaced intermediate foraminous side members disposed therebetween and connected to said front wall member, said side members extend rearwardly and connect to a pair of impervious vertically extending ball wall members having an outer edge connecting with said intermediate side members, each back wall member connecting a pair of filter beds whereby gases entering said filter beds enter between adjacent outer side members and are laterally squeezed through the filter beds and out through the opening defined by said intermediate side members and opposite edges of adjacent back members; and, said filter material discharge apparatus including a hopper having a pair transversely extending inwardly inclined walls and a pair of longitudinally inwardly inclined walls in communication at their upper extremities with the lower extremities of the outer walls of said housing, said transverse and longitudinal walls terminating at their lower extremities to form a bottom of said hopper, a first conduit in fluid communication with said bottom of said hopper, a closed tank having an inlet in fluid communication with said first conduit and an outlet in fluid communication with an inlet to a second conduit, said second conduit having an outlet in fluid communication with a vacuum means and including a filter element disposed between said tank and said vacuum means, a third conduit having an outlet in fluid communication with said bottom of said hopper axially aligned with and spaced from

said first conduit, said third conduit having an inlet open to the atmosphere, and a fourth conduit disposed between said first and said third conduit and co-axial therewith said fourth conduit having a diameter less than the diameter of said first and third conduits and received therein, said fourth conduit having an outwardly extending sealing flange portion communicating in sealing relation with said third conduit thereby creating a low pressure zone adjacent to the inlet to said first conduit with a flow-through annulus being defined between the outer diameter of said fourth conduit and the inner diameter of said first conduit, whereby upon actuation of the vacuum means filter material in said housing is pneumatically conveyed therefrom.

4,127,398

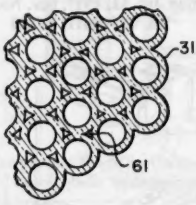
MULTIPLE-CHANNEL TUBULAR DEVICES

Joseph Singer, Jr., Arlington Heights, Ill., assignor to Ni-Tec, Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 310,971, Sep. 18, 1963, abandoned. This application Aug. 20, 1965, Ser. No. 482,327

Int. Cl.[2] F16C *1/06*

U.S. Cl. 65—4 A **11 Claims**



1. A process for forming a multiple-channel micro-tubular device comprising the following steps:

assembling a plurality of individual tubes of heat deformable material into a closely packed array of a predetermined cross section;

applying heat to said array to fuse said tubes into a unitary honeycomb structure;

drawing said heated structure to reduce its cross section by at least an order of magnitude;

cutting the drawn honeycomb structure into segments of a predetermined length and entrapping gas in each of the component tubes of said segments at a predetermined temperature below the fusion temperature of said material;

packing a plurality of said segments together to form a cluster;

and heating said cluster to a temperature above said predetermined temperature to fuse them into a unitary structure without collapsing said tubes.

4,127,399

METHOD OF MAKING GRANULATED SLAG

Nisaburo Oikawa, Kodaira, Japan, assignor to Rasa Shoji K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 703,755, Jul. 9, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,859

Claims priority, application Japan, Jul. 25, 1975, 50-91364

Int. Cl.[2] C03B *37/00*

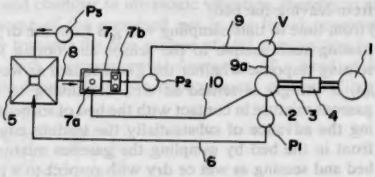
U.S. Cl. 65—19 **7 Claims**

1. A method of making granulated slag which comprises:

(a) contacting water with molten slag in an amount sufficient to cause breaking of said molten slag into solid particles, whereby said water is heated;

(b) introducing said particles and said heated water into a container having a bottom wall and equipped with an overflow upwardly spaced from said bottom wall, whereby a major portion of said particles collects near said bottom wall,

(1) the amount of said water being sufficient to cause a portion of the heated water to be released from said container through said overflow;



(c) pumping the collected particles and the remainder of said heated water as a slurry out of said container to a sedimentation zone remote from said container; and

(d) separating the particles from the water of said slurry in said zone.

4,127,400

PROCESS OF MANUFACTURING NON-GELLING SUSPENSION LIQUID FERTILIZERS

Alfred W. Petersen, Salt Lake City, and Robert B. Calvin, Granger, both of Utah, assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 376,647, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 267,817, Jun. 30, 1972, abandoned, which is a continuation of Ser. No. 52,777, Jul. 6, 1970, abandoned. This application Oct. 21, 1974, Ser. No. 516,301

Int. Cl.[2] C05B *7/00*

U.S. Cl. 71—34 **4 Claims**

1. A liquid fertilizer suspension comprising, ammoniated wet process ortho phosphoric acid, said ortho phosphoric acid having a P_2O_5 content of between 30 and 58% by weight, said suspension having between ½ and 3% by weight attapulgite clay dispersed therein, said suspension having a pH of between 6.2 and 6.6 and said suspension has non-gelling characteristics on standing; said suspension being manufactured by the following steps:

(a) reacting the wet process ortho phosphoric acid, ammonia and water in a reaction vessel at a pH of between 3.5 and 5.5;

(b) adding the clay to the resulting product;

(c) adjusting the final pH to between 6.2 and 6.6.

4,127,401

AMINOMETHANEPHOSPHONIC ACID COMPOUNDS CONTAINING PLANT-GROWTH REGULANT COMPOSITIONS

Reimer Cölln, Wuppertal, and Klaus Lürssen, Grosskönigsdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

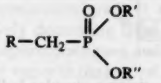
Continuation of Ser. No. 660,542, Feb. 23, 1976, abandoned, which is a continuation of Ser. No. 478,132, Jun. 10, 1974, abandoned. This application Feb. 22, 1977, Ser. No. 770,349

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1973, 2331187

Int. Cl.[2] A01N *9/36*

U.S. Cl. 71—76 **3 Claims**

1. Method of inhibiting the growth of cereal crops which method comprises applying to the plants or their habitat effective amounts of an aminomethanephosphonic acid compound of the formula



(I)

in which

R is an $-NH^{\oplus}{}_3X^{\ominus}$ radical wherein

$X^{\ominus}$ is one equivalent of a chloride anion or sulfate, and

R' and R" are both hydrogen.

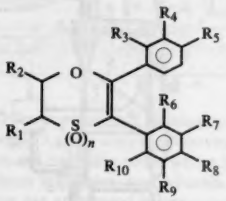
4,127,402

SUBSTITUTED 2,3-DIHYDRO-1,4-OXATHIIN PLANT GROWTH REGULANTS

Bruce A. Graham; Michael A. Puttock, both of Guelph; Ethel E. Felauer, Arkell, all of Canada, and Robert W. Neidermyer, Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal Ltd., Montreal, Canada

Division of Ser. No. 627,177, Oct. 30, 1975, Pat. No. 4,043,792, which is a division of Ser. No. 459,442, Apr. 9, 1974, Pat. No. 3,947,264. This application Jun. 10, 1977, Ser. No. 805,499
The portion of the term of this patent subsequent to Mar. 30, 1993, has been disclaimed.
Int. Cl.[2] A01N *5/00*
U.S. Cl. 71—76 9 Claims

1. A method of regulating the growth of plants comprising applying to a locus at which it is desired to regulate the growth of plants, in an amount effective to regulate the growth of plants, a substituted 2,3-dihydro-1,4-oxathiin chemical of the formula



wherein the R's are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, fluorine, amino, lower alkylthio and lower acyloxy and n is zero, 1 or 2, the plant growth regulant effect being a non-herbicidal effect selected from the group consisting of increasing the sugar content in sugar producing species, inhibition of flowering, and cessation of terminal growth, the said amount being a non-herbicidal amount.

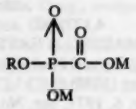
4,127,403

CARBOXYPHOSPHONATE BRUSH CONTROL AGENTS

Colin L. McIntosh, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

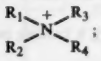
Division of Ser. No. 769,096, Feb. 16, 1977, which is a division of Ser. No. 590,374, Jun. 25, 1975, Pat. No. 4,018,854, which is a division of Ser. No. 474,537, May 30, 1974, abandoned, which is a continuation-in-part of Ser. No. 381,619, Jul. 23, 1973, abandoned. This application Apr. 10, 1978, Ser. No. 895,101
Int. Cl.[2] A01N *9/36*
U.S. Cl. 71—86 2 Claims

1. A method of retarding the growth of plants which consists essentially of applying to the plants an effective amount of a compound of the formula



wherein

M is sodium, lithium, potassium, calcium, magnesium or barium, or



;

R is M;

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms;

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, or hydroxyalkyl of 2 to 4 carbon atoms;

R_4 is hydrogen or alkyl of 1 to 12 carbon atoms, provided that the total number of carbon atoms in R_1, R_2, R_3 and R_4 is less than 16.

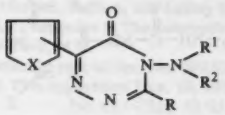
4,127,404

4-AMINO-1,2,4-TRIAZIN-5-ONE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Helmut Timmler; Wilfried Draber, both of Wuppertal, and Ludwig Eue, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 28, 1977, Ser. No. 837,340
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647460
Int. Cl.[2] C07D *253/06;* A01N *9/12, 9/22*
U.S. Cl. 71—90 37 Claims

1. 4-Amino-1,2,4-triazin-5-one compound of the formula



(I),

wherein

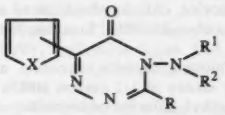
R is hydrogen, alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, phenyl, phenylalkyl, wherein the alkyl moiety has up to 2 carbon atoms, substituted phenyl, and substituted phenylalkyl wherein the benzene moiety is substituted with at least one of halogen, hydroxyl alkyl of up to 4 carbon atoms, alkoxy of up to 4 carbon atoms, or haloalkyl of up to 2 carbon atoms and up to 5 halo atoms,

R^1 is halogen or alkyl of up to 6 carbon atoms,

R^2 is hydrogen, alkyl of up to 6 carbon atoms, haloalkyl of up to 4 carbon atoms and up to 5 halo atoms, phenyl, phenylalkyl of up to 2 carbon atoms in the alkyl moiety, substituted phenyl, and substituted phenylalkyl wherein the benzene ring is substituted with at least one of halogen alkyl of up to 4 carbon atoms, alkoxy of up to carbon atoms or alkylthio of up to 4 carbon atoms, and

X is oxygen, sulfur or the NH group and salts thereof.

20. Method of combating undersired vegetation which method comprises applying to such vegetation or their habitat herbicidally effective amounts of 4-amino-1,2,4-triazin-5-one compounds of the formula



(I),

wherein

R is hydrogen, alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, phenyl, phenylalkyl, wherein the alkyl moiety has up to 2 carbon atoms, substituted phenyl, and substituted phenylalkyl wherein the benzene moiety is substituted with at least one of halogen, hydroxyl alkyl of up to 4 carbon atoms, alkoxy of up to 4 carbon atoms, or haloalkyl of up to 2 carbon atoms and up to 5 halo atoms,

R^1 is hydrogen or alkyl of up to 6 carbon atoms,

R^2 is hydrogen, alkyl of up to 6 carbon atoms, haloalkyl of up to 4 carbon atoms and up to 5 halo atoms, phenyl, phenylalkyl of up to 2 carbon atoms in the alkyl moiety, substituted phenyl, and substituted phenylalkyl wherein the benzene ring is substituted with at least one of halogen alkyl of up to 4 carbon atoms, alkoxy of up to carbon atoms or alkylthio of up to 4 carbon atoms, and

X is oxygen, sulfur or the NH group or a salt thereof.

4,127,405
HERBICIDAL SULFONAMIDES

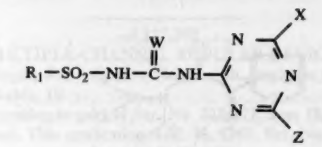
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 769,914, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 674,668, Apr. 7, 1976, abandoned. This application Aug. 15, 1977, Ser. No. 824,805

Int. Cl.[2] C07D *251/44, 251/46;* A01N *9/16*

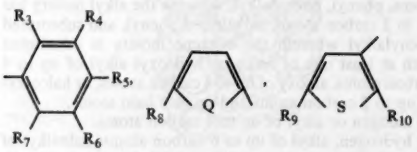
U.S. Cl. 71—93 114 Claims

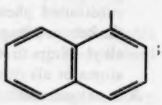
1. A compound having the formula:



wherein

R_1 is





;

R_3 and R_6 are independently hydrogen, fluorine, chlorine, bromine, iodine, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, nitro, trifluoromethyl, cyano, $CH_3S(O)_n$— or $CH_3CH_2S(O)_n$—;

R_4 is hydrogen, fluorine, chlorine, bromine or methyl;

R_5 is hydrogen, fluorine, chlorine, bromine, methyl or methoxy;

R_7 is hydrogen, fluorine, chlorine, bromine, alkyl of 1–2 carbon atoms or alkoxy of 1–2 carbon atoms;

R_8 is hydrogen, methyl, chlorine or bromine;

R_9 and R_{10} are independently hydrogen, methyl, chlorine or bromine;

W and Q are independently oxygen or sulfur;

n is 0, 1 or 2;

X is hydrogen, chlorine, bromine, methyl, ethyl, alkoxy of 1–3 carbon atoms, trifluoromethyl, CH_3S— or CH_3OCH_2—; and

Z is methyl or methoxy; or an agriculturally suitable salt thereof;

provided that:

(a) when R_5 is other than hydrogen, at least one of R_3, R_4, R_6 and R_7 is other than hydrogen and at least two of R_3, R_4, R_6 and R_7 must be hydrogen;

(b) when R_5 is hydrogen and all of R_3, R_4, R_6 and R_7 are other than hydrogen, then all of R_3, R_4, R_6 and R_7 must be either chlorine or methyl; and

(c) when R_3 and R_7 are both hydrogen, at least one of R_4, R_5 or R_6 must be hydrogen.

27. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,127,406
PROCESS FOR THE HEAT TREATMENT OF FINE MATERIAL

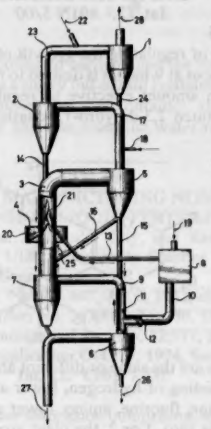
Wilfried Kreft, Beckum, and Wolf Goldmann, Neubeckum, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed May 25, 1977, Ser. No. 800,207

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 2629082

Int. Cl.[2] C22B *1/10;* C01F *7/00*

U.S. Cl. 75—26 5 Claims



1. In a process of heat-treating fine-grained solid material, comprising the steps of preheating the material in a first zone, then heating the material to the final treatment temperature by passing it through a flame in a second zone, wherein solid or liquid fuel is directly used to produce the flame, then separating the material in a third zone from the hot exhaust gases leaving the second zone, and conducting the separated exhaust gases to the first zone for preheating the material, wherein the product has a high carbon content, the improvement comprising the steps of gasifying said solid or liquid fuel in a separate gasifying zone to produce a combustible gas, supplying said combustible gas to the second zone and burning such gas in the second zone to produce said flame, whereby a low carbon content product is produced.

4,127,407
METHOD OF MAKING A CASTING POWDER

Hans J. Eitel, Lönsweg 58, and Jens Eitel, Prinzenhöhe 6, both of Mülheim, Germany (4330)

Filed Apr. 6, 1977, Ser. No. 785,179

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614957

Int. Cl.[2] C21C *7/00*

U.S. Cl. 75—53 4 Claims

1. A method of making a casting powder which comprises the steps of:

forming particles of a particle size below 40 microns of at least one casting powder component selected from the group consisting of bituminous coal fly ash, lime alumina and silica;

forming a slurry of said particles in water and mixing same with an expanding agent to form a mixture; and

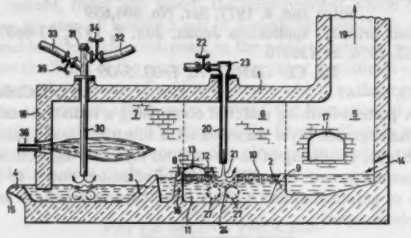
expanding said mixture by spraying it into an evacuated chamber to transform said particles into hollow bodies of a particle size in excess of 60 microns.

4,127,408

METHOD FOR THE CONTINUOUS REFINEMENT OF CONTAMINATED COPPER IN THE MOLTEN PHASE

Horst Weigel; Gerhard Melcher, both of Cologne, and Wolfgang Wuth, Berlin, all of Germany, assignors to Klöckner Humboldt Deutz Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 685,896, May 12, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,600
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522662
Int. Cl.[2] C22B *15/00*
U.S. Cl. 75—76 8 Claims



1. In a method for continuously refining impurities from a copper melt, wherein molten copper is conveyed sequentially through reduction and oxidation zones where it is reacted with gases to free it from impurities, and wherein fuel and a first oxygen containing gas are passed in countercurrent relationship to the flow of molten copper in said reduction zone, said oxygen being present in less than stoichiometric quantities thereby producing a hot reducing gas, the still unburnt fuel being passed to said oxidation zone where it is reacted with a second oxygen containing gas, said second oxygen containing gas being first brought into contact with said molten copper as a reactive stream before it contacts said still unburnt fuel, the improvement which comprises:

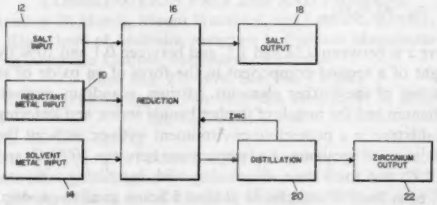
blowing said second oxygen containing gases substantially vertically in the form of a confined energy-rich stream at the essentially smooth surface of the metal bath to produce a torus-type rotating stream at a pressure between 10 and 20 kp/cm^2 through an acceleration nozzle with a velocity between 1 Mach and 3 Mach, at a distance of less than 1 meter, with a jet force of from 5 to 25 Newtons such that a definite convective system results having a dimension perpendicular to the jet direction of approximately 0.34 to 0.85 meter, and a depth substantially less than said perpendicular dimension.

4,127,409

METHOD OF REDUCING ZIRCONIUM

Joseph A. Megy, Corvallis, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 623,325, Oct. 13, 1975. This application May 7, 1976, Ser. No. 684,096
Int. Cl.[2] C22B *5/04, 34/14*
U.S. Cl. 75—84.4 9 Claims



1. The method of producing nuclear grade zirconium from a zirconium compound, comprising the steps of:

preparing a fused salt phase including the zirconium compound to be reduced, and

contacting the fused salt phase with a molten metal phase which comprises aluminum and zinc, whereby the zirconium compound is reduced by the aluminum, with the aluminum being transported from the molten metal phase to the fused salt phase while zirconium is transported from the fused salt phase to the molten metal phase.

4,127,410

NICKEL BASED ALLOY

Howard F. Merrick, Suffern, and LeRoy R. Curwick, Warwick, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 669,824, Mar. 24, 1976, abandoned. This application Nov. 16, 1976, Ser. No. 742,096
Int. Cl.[2] C22C *19/05*
U.S. Cl. 75—171 5 Claims

1. A nickel-base alloy consisting essentially of 11.5% to 16% chromium, up to 5% metal from the group tantalum and tungsten and mixtures thereof provided the amount of any tungsten does not exceed 3% and further provided the amounts of chromium and any tantalum and tungsten are in proportions in accordance with the relationship

$$\%Cr + \tfrac{1}{2}(\%Ta + \%W) \text{ equal } 13.5\% \text{ to } 17.5\%,$$

4.3% to about 5% aluminum and 4% to about 5% titanium provided the sum of aluminum plus titanium is at least 8.5%, 2% to 4% molybdenum, up to 2% hafnium up to 10% cobalt, 0.08% to 0.2% carbon, up to 0.4% boron, up to 0.2% zirconium and balance essentially nickel.

4,127,411

HEAT RESISTANT AND SUPER HARD COMPOSITE MATERIALS AND A METHOD FOR PRODUCING THE SAME

Seishi Yajima; Toetsu Shishido; Mamoru Omori; Hideo Kayano, and Masaaki Hamano, all of Oharai, Japan, assignors to The Foundation: The Research Institute for Special Inorganic Materials, Asahi, Japan

Filed Dec. 27, 1976, Ser. No. 754,215
Claims priority, application Japan, Dec. 29, 1975, 51-157769
Int. Cl.[2] B22F *3/00*
U.S. Cl. 75—236 6 Claims

1. A method for producing a heat resistant and super hard composite materials, which comprises mixing not more than 60% by weight of an organosilicon high molecular weight compound, the main skeleton components of which are silicon and carbon or an organosilicon high molecular weight compound, the main skeletion components of which are silicon and carbon and which contains foreign elements other than silicon, carbon, hydrogen and oxygen with not less than 40% by weight of metal material powders consisting mainly of at least one metal element selected from the group consisting of zirconium, hafnium, titanium, thorium, uranium, chromium, silicon, tungsten, vanadium, molybdenum, manganese, boron, niobium, tantalum or beryllium, molding the mixture into a shaped article and baking the shaped article under a non-oxidizing atmosphere at a temperature of lower than the semi-melting point of the above described metal powders.

5. Heat resistant and super hard composite materials having a Vickers hardness of 1540 to 2170 consisting mainly of at least one of metal carbides and at least one of the metals that form such metal carbides and containing a small amount of a silicate of the above described metals or β-type SiC.

4,127,412

PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS

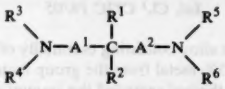
Norman G. Rule, Rochester; Martin A. Berwick, Kendall, and Lawrence E. Contois, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 639,040, Dec. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 534,953, Dec. 20, 1976, abandoned. This application Oct. 12, 1977, Ser. No. 841,270

Int. Cl.[2] G03G *5/06, 13/22*

U.S. Cl. 96—1 PC **19 Claims**

19. In an electrophotographic process wherein an electrostatic charge pattern is formed on a photoconductive element comprised of an electrically conducting support bearing a layer of an organic, photoconductive insulating composition, the improvement wherein said organic, photoconductive insulating composition comprises an electrically insulating polymeric binder and an organic photoconductive compound having the formula



wherein

R^1 and R^2, which may be the same or different, represent, when taken separately, (i) hydrogen, (ii) an unsubstituted alkyl group or substituted aikyl group having 1 to about 18 carbon atoms, said substituted alkyl having a substituent selected from the group consisting of alkoxy, aryloxy, amino, hydroxy, aryl, alkylamino, arylamino, nitro, cyano, halogen, and acyl or (iii) when taken together, R^1 and R^2 represent the saturated carbon atoms necessary to complete a cycloalkyl ring having 3 to 10 carbon atoms in the cycloalkyl ring,

R^3, R^4, R^5, and R^6, which may be the same or different, each represent an unsubstituted or substituted aryl group having a substituent selected from the group consisting of alkyloxy, aryloxy, amino, hydroxy, alkylamino, arylamino, nitro, cyano, halogen, alkyl, and acyl; and

A^1 an A^2, which may be the same or different, represent an unsubstituted phenyl group or a substituted phenyl group having the substituents defined for R^3, R^4, R^5 and R^6 above.

4,127,413

METHOD FOR THE ADDITION OF PHOTOGRAPHIC ADDENDA

Masao Ishihara, Hino; Ryoichiro Kobayashi, Tama; Tugumoto Usui, Hachioji, and Takayoshi Omura, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 2, 1978, Ser. No. 874,662

Claims priority, application Japan, Feb. 9, 1977, 52-13193

Int. Cl.[2] G03C *1/84, 1/40*

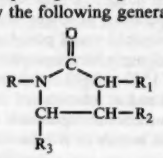
U.S. Cl. 96—56 **6 Claims**

1. In a method for the addition of oil-soluble photographic addenda to a hydrophilic colloidal solution for forming a layer of a light-sensitive silver halide photographic material which method comprises;

(a) dissolving said addenda with a high-boiling organic solvent,

(b) and thereafter dispersing, into the hydrophilic colloidal solution, the addenda dissolved in the high-boiling organic solvent,

the improvement comprising said high boiling organic solvent being represented by the following general formula:



wherein R represents an alkyl group or alkenyl having 6 to 22 carbon atoms, R_1, R_2 and R_3 individually represent hydrogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy carbonyl group or an acyloxy group having 1 to 10 carbon atoms.

4,127,414

PATTERN-FORMING MATERIALS HAVING A RADIATION SENSITIVE CHALCOGENIDE LAYER AND A METHOD OF FORMING PATTERNS WITH SUCH MATERIALS

Akira Yoshikawa, Tokorozawa; Haruo Nagai, Kawasaki; Osamu Ochi, Kodaira; Kazuko Nakano, Machida, and Yoshihiko Mizushima, Fuchu, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jun. 8, 1977, Ser. No. 804,659

Claims priority, application Japan, Jun. 8, 1976, 51-66879; Nov. 12, 1976, 51-136070

Int. Cl.[2] G03C *1/76, 1/00, 5/00*

U.S. Cl. 96—67 **3 Claims**

1. A pattern-forming material comprising a radiation sensitive chalcogenide layer disposed on a substrate; said chalcogenide layer consisting of an amorphous layer having a chemical composition of 75 to 95 mol% of selenium and 5 to 25 mol% of germanium and a silver layer superimposed on said amorphous layer.

4,127,415

ALUMINUM BOROPHOSPHATE GLASS COMPOSITIONS

Carr L. W. Quackenbush, Lexington; Andrew G. Kolbeck, Beverly, and Richard M. Klein, Framingham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 2, 1977, Ser. No. 773,525

Int. Cl.[2] C03C *3/14, 3/16, 3/28*

U.S. Cl. 106—47 R **4 Claims**

1. An aluminum borophosphate glass composition comprising 2 to 18 mole percent P_2O_5, 30 to 70 mole percent Al_2O_3 and 20 to 60 mole percent B_2O_3.

4,127,416

METHOD OF PRODUCING A CERAMIC PRODUCT

Roland J. Lumby; Bernard North, both of Birmingham, and Alfred J. Taylor, West Midlands, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 13, 1977, Ser. No. 815,454

Claims priority, application United Kingdom, Jul. 24, 1976, 30985/76; Jul. 24, 1976, 30986/76; Feb. 21, 1977, 7187/77

Int. Cl.[2] C04B *35/50, 35/58*

U.S. Cl. 106—73.2 **12 Claims**

1. A method of producing a ceramic product, comprising the steps of forming a powder mixture consisting essentially of a first component consisting of compounds containing the elements silicon, aluminum, oxygen and nitrogen in proportions such that the total number of silicon and aluminum atoms to the total number of oxygen and nitrogen atoms lies in the range 0.735 to 0.77 and such that said compounds react together during the subsequent sintering process to produce a single phase ceramic material obeying the general formula:

$$Si_{6-z}\,Al_z\,O_zN_{8-z}$$

where z is between 0.38 and 1.5, and between 0.1 and 10% by weight of a second component in the form of an oxide of at least one of the further elements, yttrium, scandium, cerium, lanthanum and the metals of the lanthanide series; and sintering said mixture in a protective environment with or without the application of presssure at a temperature between 1600° C. and 2000° C. and for a time, decreasing with increasing temperature, of at least 10 minutes to at least 5 hours so as to produce a ceramic material containing at least 80% by volume of said single phase ceramic material together with a second phase containing said at least one further element, which is a glass phase during sintering.

4,127,417

METHOD FOR IMPROVING WORKABILITY OF FRESH FIBER CONTAINING CEMENT MORTAR AND CONCRETE

Eizaburo Okada, Wakayama, and Kenichi Hattori, Musashino, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1977, Ser. No. 853,479
Claims priority, application Japan, Nov. 22, 1976, 51-141001
Int. Cl.[2] C04B 7/02
U.S. Cl. 106—99 10 Claims

1. In a method for preparing a moldable cementitious mixture by mixing in a mixing vessel hydraulic cement, aggregate for cement, fibers and water, the improvement which comprises the step of: mixing a salt of β-naphthalenesulfonic acid-formaldehyde high condensate in the mixture prior to mixing either the fibers or the cement with the other ingredients of the mixture, the amount of said condensate added to the mixture being an amount effective to prevent the formation of fiber balls in the mixture and to disperse the fibers uniformly in the mixture whereby to improve the physical properties of the molded product made of the mixture.

4,127,418

PAPER SIZING PROCESS

Mark E. Bateman, Woodridge, and Jeffrey T. Palmer, Roselle, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 772,917, Feb. 28, 1977, Pat. No. 4,065,349.
This application Jul. 5, 1977, Ser. No. 812,815
Int. Cl.[2] C08L 3/04; D21D 3/00
U.S. Cl. 106—213 8 Claims

1. A sizing composition comprising cationic quaternary amine starch with a D.S. of the range of 0.025 to 0.03 and a monoester of a benzene carboxylic acid anhydride having from 6 to 60 carbon atoms in the ester group wherein the ratio of said retention aid to said monoester is within the range of 0.05:1 to 2.0:1.0, retention aid to monoester.

4,127,419

PAN RELEASE AGENT

Bernard F. Szuhaj, Lombard, and Joseph R. Yaste, Hoffmann Estates, both of Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Jan. 12, 1977, Ser. No. 758,715
Int. Cl.[2] C08L 91/00
U.S. Cl. 106—243 4 Claims

1. A method of preparing a sprayable pan release product comprising mixing lecithin and a tri-glycol ester having fatty acid chains from 6 to 12 carbon atoms at a temperature sufficient to form a solution thereof, cooling the mixture to about 90° F., adding thereto an alcohol and water, said alcohol being present in an amount of about 20% to about 25% of the weight of said product, said water being present in an amount from about 60% to about 65%, said lecithin being present in an amount of about 5% with the remainder being a member selected from the class consisting of said tri-glycol ester and a mixture of said tri-glycol ester and a second tri-glycol ester having fatty chains of from 16 to 18 carbon atoms, and placing the mixture in a mechanical dispensing container whereby dispensing is achieved without the use of an aerosol propellant.

4,127,420

COMMINUTION PROCESS AND PIGMENT

Dominic R. Harris, Mount Waverley, and Lance E. Rowley, St. Kilda, both of Australia, assignors to Pigment Manufacturers of Australia Limited, Melbourne, Australia

Filed Sep. 27, 1976, Ser. No. 727,383
Claims priority, application Australia, Oct. 13, 1975, 3560/75
Int. Cl.[2] C09B 67/00
U.S. Cl. 106—288 Q 21 Claims

1. In a process of comminution comprising grinding a mixture of a crude pigment and a fugitive auxiliary wherein the fugitive auxiliary is a long chain alkyl glycoside, or an alkali metal, ammonium or water soluble amine salt of a phosphate or sulfate ester of a long chain alcohol or a long chain alcohol alkoxylate, a long chain alkyl ester sulfonate, or a long chain alkyl sulfosuccinate, said fugitive auxiliary being suitable as a dispersant or colloidal stabilizer in the process of comminution but sufficiently labile so as to be capable of being deactivated or removed without adversely influencing the properties of the pigment, the improvement which comprises deactivating the fugitive auxiliary by hydrolysis and removing the remaining long chain alcohol or long chain alcohol alkoxylate residues from the pigment composition by steam distillation or high temperature drying.

4,127,421

PROCESS FOR GRANULATING LEAD CHROMATE-CONTAINING PIGMENTS

Richard M. Ferrill, Jr., Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 22, 1977, Ser. No. 826,483
Int. Cl.[2] C08K 9/10
U.S. Cl. 106—298 10 Claims

1. A process for the production of high yields of nondusting, free-flowing granules of a lead chromate-containing pigment composition, which process comprises (a) forming an aqueous slurry of a lead chromate-containing pigment dispersed in a friable hydrocarbon resin having a Ring and Ball softening point within the range of 50° to 75° C. and a number average molecular weight range of 500 to 900 by agitating said pigment and resin in water in the presence of a cationic surfactant at a temperature above the softening point of the resin, said pigment and resin being present in a weight ratio from 7:1 to 1:1 and said resin and surfactant being present in a weight ratio of from about 2.5:1 to about 3.5:1, (b) continuing agitation of said slurry at a temperature within the range of from about 5° to about 20° C. above the softening point of said resin until the pigment dispersion is granulated and (c) recovering the resulting granules.

4,127,422

DRY, WATER-DISPERSIBLE PIGMENT COMPOSITIONS

John Guzi, Jr., Argyle, and William J. Hart, Glens Falls, both of N.Y., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 572,599, Apr. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 435,392, Jan. 21, 1974, abandoned. This application May 25, 1977, Ser. No. 800,254
Int. Cl.[2] C04B 31/40
U.S. Cl. 106—308 Q 11 Claims

1. A process for preparing a dry, water-dispersible pigment composition comprising the steps of: forming a homogeneous mixture comprising milled or homogenized pigment, water and, by weight of the pigment, (a) from 15 to 45% of a nonionic dispersing agent selected from the group consisting of polyether alcohols, alkylene oxide-alkylene diamine block copolymers, polyoxyethylene glycol esters and polyoxyethylene glycerol esters, (b) from 10 to about 67% of at least one water-dispersible nonionic polymer selected from the group consisting of (1) an at least partially hydrolyzed polymer of vinyl acetate and (2) a polymer of an N-vinyl pyrrolidone and (c) from 0 to 40% of a nonionic colloid; and removing the water from said mixture until a dry composition is obtained, the total amount of dispersing agent, polymer and colloid being from 20 to 45% by weight of the dry composition.

6. A dry, water-dispersible pigment composition exhibiting good flocculation resistance and developing upon dispersion in aqueous systems good strength and color values, said composition comprising from 55 to 80% of pigment and from 45 to 20% of a nonionic material comprising, based on the weight of the pigment, from 15 to 45% of a nonionic dispersing agent selected from the group consisting of polyether alcohols, alkylene oxide-alkylene diamine block polymers, polyoxyethylene glycol esters and polyoxyethylene glycerol esters, from 10 to about 67% of at least one water-dispersible nonionic polymer selected from the group consisting of (1) an at least partially hydrolyzed polymer of vinyl acetate and (2) a polymer of an N-vinyl pyrrolidone, and from 0 to 40% of a nonionic colloid.

4,127,423
CONTACT LENS CLEANING SOLUTION

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons and Company, Inc., Washington, D.C.

Filed Sep. 13, 1977, Ser. No. 832,885
Int. Cl.[2] B08B *3/10, 11/00;* C11D *7/10*
U.S. Cl. 134—30 13 Claims

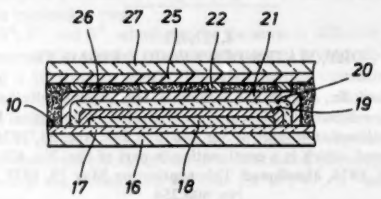
1. A composition for cleaning hydrophobic silicone or hydrophilic soft contact lenses, comprising a solution in deionized distilled water of 0.2–1.5% of a sodium silicate having a SiO_2:Na_2O ratio of 1:1 to 4:1, an isotonic amount of sodium chloride, about 0.5 to 0.3 of ethylenediamine tetraacetic acid, about 0.4–0.9% a cellulose derivative viscosity control agent, about 0.5–0.9% of polyvinylalcohol, about 0.1–0.4% of a nonionic detergent about .002–.005% of a bactericide, and the balance deionized or distilled water, all percentage being by weight, and sufficient dilute HCl to achieve a pH of about 10.2 to 10.9.

5. A method of cleaning proteinaceous and other tear deposits from hydrophilic or hydrophobic soft contact lenses which method comprises heating said lenses in an aqueous solution having a pH of about 10.2 to 10.9 and containing about 0.2 to 1.5% by weight of a crystalline sodium silicate, removing the lenses and rinsing the lenses with deionized or distilled water.

4,127,424
PHOTOVOLTAIC CELL ARRAY

Lee R. Ullery, Jr., Landenberg, Pa., assignor to Ses, Incorporated, Newark, Del.

Continuation-in-part of Ser. No. 747,849, Dec. 6, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 827,927
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 P 10 Claims



1. In an integrated array of connected, thin film, photovoltaic cells comprising:

a substrate of electrically insulative material;

a plurality of thin film photovoltaic cells integrally united to a major surface of said substrate in a spaced-apart relationship, each of said cells comprising:

an electrically conductive bottom electrode united to said major surface of said substrate;

a film of first semiconductor material of one type conductivity covering and overlapping all but a portion adjacent an edge of said bottom electrode;

a film of second semiconductor material of opposite type conductivity and forming a p-n junction with the first semiconductor material and;

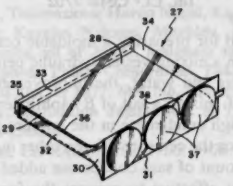
a top electrode, in contact with said second semiconductor material and which allows radiant energy to pass into the second semiconductor material, selected ones of said top and bottom electrodes of one cell being connected to selected top and bottom electrodes of adjacent cells to connect said cells in a series or parallel arrangement; the improvement wherein said substrate comprises an insulative ceramic and said bottom electrode comprises an electrically conductive ceramic united to said major surface of said substrate.

3. The integrated array of claim 1 wherein the bottom electrode comprises from about 15 to about 85 percent by weight of a metal, from about 5 to about 50 percent by weight of ceramic material and from about 5 to about 60 percent by weight of a metal oxide.

4,127,425
LUMINESCENT SOLAR COLLECTOR

Robert R. Chambers, Studio City, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 31, 1978, Ser. No. 892,366
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 PC 12 Claims



1. In a luminescent solar collector wherein a luminescent sheet having upper and lower surfaces separated by a plurality of upstanding edge faces focuses light on at least one photovoltaic cell at least partially covering at least one of said faces, the improvement wherein said sheet is contoured in the vicinity of each such covered edge face so that the width of same between said upper and lower surfaces is substantially greater than the thickness of said sheet diatal from each said covered edge face.

4,127,426
METHOD OF MAKING ELECTRICAL CONDUCTORS OF ALUMINUM-IRON ALLOYS

Jean-Claude Nicoud, Saint-Egreve, France, assignor to Societe de Vente de L'Aluminium Pechiney, Paris, France

Filed May 12, 1976, Ser. No. 685,678
Claims priority, application France, May 14, 1975, 75 15728
Int. Cl.[2] C22F *1/04*
U.S. Cl. 148—11.5 A 6 Claims

1. A process for forming electrical conductors of aluminum-iron alloy consisting of by weight from 0.5 to 5% of iron, from 0.02 to 0.2% of silicon, the remainder being aluminum and impurities, comprising granulating the Al-Fe alloy into particles of an acicular shape having a diameter of between about 50 and 1000 μm and a length of between about 1 and 10 mm, introducing said shaped divided alloy into a container of an extrusion press, preheating said container at a temperature between about 300° and 600° C., and extruding said alloy at a press extrusion ratio at least equal to about 5 to about 10 to provide conductors having a very highly fibered structure in the longitudinal direction and in which are present monoclinic Al_3Fe particles.

6. A process as defined in claim 1 wherein the extruded product is subsequently deformed or shaped cold and then heat treated.

4,127,427
SUPER MILD STEEL HAVING EXCELLENT WORKABILITY AND NON-AGING PROPERTIES

Hiroshi Hirano, Nishinomiya; Hiroshi Kobayashi, Kakogun; Jiro Jizaimaru, Kakogawa, and Hidenori Shirasawa, Kakogun, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Aug. 16, 1976, Ser. No. 714,891
Claims priority, application Japan, Aug. 15, 1975, 50-99643
Int. Cl.[2] C22C *38/06, 38/28*
U.S. Cl. 148—36 3 Claims

1. A super mild aluminum killed steel in the form of a hot rolled plate having excellent workability and non-aging properties, which consists in weight percent of up to 0.07% C, up to 0.5% Si, up to 0.5% Mn, 0.005 to 0.1% Al, 0.1 to 1.3% Cr and 0.015 to 0.15% Zr, the balance being Fe and impurities, wherein [C + 1/5 (Si + Mn)] is up to 0.22%.

4,127,428

STAINLESS CAST ALLOY STEEL FOR USE AT LOW TEMPERATURES

Masao Izumiyama, Zushi; Naohiko Kagawa, and Kenji Satoh, both of Yokohama, all of Japan, assignors to Japan Gasoline Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1976, Ser. No. 710,818
Claims priority, application Japan, Aug. 2, 1975, 50-94299
Int. Cl.[2] C22C *38/40*
U.S. Cl. 148—38 4 Claims

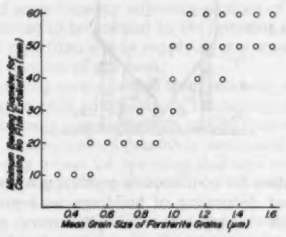
1. A stainless cast alloy steel for use at from room temperature to 0° K. consisting essentially of about 0.03 to about 0.15% by weight of C., up to about 2% by weight of Si, up to about 2% by weight of Mn, about 18 to about 26% by weight of Cr, about 5 to about 13% by weight of Ni, and the remainder of Fe and unavoidable impurities, wherein about 20 to about 40% by volume based on the volume of said steel constitutes a ferrite phase.

4,127,429

FORSTERITE INSULATING FILMS FORMED ON SURFACE OF A GRAIN-ORIENTED SILICON STEEL SHEET HAVING A HIGH MAGNETIC INDUCTION AND A METHOD OF FORMING THE SAME

Toshio Ichida, and Michiro Komatsubara, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 27, 1977, Ser. No. 810,379
Claims priority, application Japan, Jul. 5, 1976, 51-79720
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—113 1 Claim



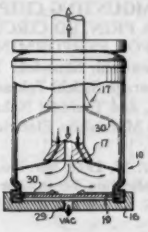
1. In a method of producing a forsterite insulating film having a good adhesion property to a grain-oriented silicon steel sheet with a high magnetic induction, in which a cold rolled silicon steel strip having a desired final gauge, is subjected to decarburizing-annealing in wet hydrogen atmosphere at a temperature of 700°–900° C. to form subscale including SiO_2 on the surface of the strip, an annealing separator consisting mainly of MgO is coated on the decarburized strip, the thus treated strip is wound into a coil and the coiled strip is subjected to a final annealing by keeping the temperature at 800°–920° C. in a neutral gas atmsophere inert against iron and iron oxide so as to fully develop secondary recrystallized grains, and then raising and keeping the temperature at 1,150°–1,250° C. after said neutral gas is replaced with hydrogen gas, the improvement which comprises maintaining an average dew point of the atmosphere contacting with said coiled strip within a range of −20° C. to +20° C. during the temperature rising stage up to 1,150°–1,250° C., and maintaining an average dew point of the atmosphere contacting with said coiled strip at not more than +10° C. during the high temperature keeping stage at 1,150°–1,250° C., provided that a period exposing to the atmosphere having a dew point higher than +10° C. is not more than 5 hours, whereby said forsterite insulating film composed of forsterite grains having a mean grain size of not more than 0.7 μm is formed

4,127,430

METHOD OF MAKING A CONTAINER HAVING BLOWN PLASTIC LINER AND METHOD AND APPARATUS FOR FORMING SAME

Glenn L. Davis, Chicago, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed May 9, 1977, Ser. No. 794,993
Int. Cl.[2] B32B *1/10*; B29C *17/07*
U.S. Cl. 156—244.14 18 Claims



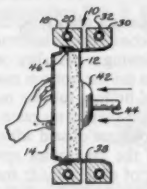
1. A method of lining an open ended container having a body and an end wall, said method comprising the steps of initiating the forming of a tube having a free open end and being of a lesser cross sectional size than the interior of the container, engaging the open end of the tube with spaced portions of the container end wall with a central portion of the container end wall forming a closure for the tube, inflating the tube across the container end wall, and then stretching and expanding the tube within the container into engagement with the container body.

4,127,431

METHOD FOR ASSEMBLING A BACKER MEMBER TO A SHELL MEMBER

Kenneth J. Susnjara, Santa Claus, Ind., assignor to Thermwood Corporation, Dale, Ind.

Filed Oct. 17, 1977, Ser. No. 842,790
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 156—282 7 Claims



1. Method of bonding the side edges of a rigid backer member to a thin hollow plastic shell member to produce a laminated cabinet door or similar article comprising the steps of:

providing a shell member which includes rearwardly extending edge portions which define a recessed chamber which has internal dimensions only slightly greater than the external dimensions of the backer member;

providing first frame means for receiving the edge portions of said shell and second frame means having thin sheet metal guide means mounted thereon which extend into said recessed chamber internally of said edge portions when said shell is in said first frame, said sheet metal guide means having a coating of adhesive on its internal surfaces;

applying adhesive to the side edges of said backer member;

moving said backer member with said adhesive thereon in contact with said adhesive coated guide means toward said shell member until said backer member occupies said recessed chamber, said moving step causing a portion of the adhesive on the side edges of the backer member to be

wiped off by the guide means while a portion of the adhesive coating already on the guide means will be wiped onto the leading edge of the backer member; and

continuing to move said backer member and shell together relative to at least said second frame means to remove said guide means from the space between said shell edge portions and said side edges of said backer member.

4,127,432

METHOD FOR MOUNTING CHIP TYPE CIRCUIT ELEMENTS ON A PRINTED CIRCUIT BOARD AND APPARATUS FOR PERFORMING THE SAME

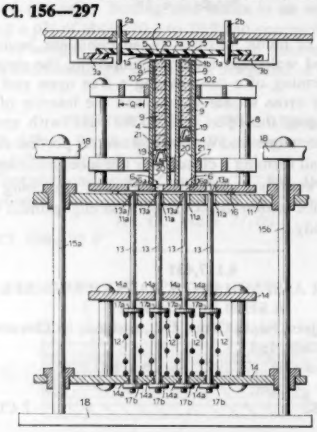
Satoshi Kuwano, Kawanishi; Shun-ichi Yabuzaki, Neyagawa; Satoshi Kitaichi, Ibaragi; Seiichi Takesawa, Kadoma; Hitoshi Minabe, Neyagawa, and Tsuneshi Nakamura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 12, 1977, Ser. No. 786,944

Claims priority, application Japan, Apr. 12, 1976, 51-41572

Int. Cl.[2] H01L *21/98;* **B32B** *31/26;* **C09J** *5/06*

U.S. Cl. 156—297 **34 Claims**



1. A method for mounting chip type circuit elements on a printed circuit board, comprising: horizontally positioning a printed circuit board having a plurality of adhesive layers at predetermined positions on the bottom major surface thereof; arranging a plurality of hollow tubular magazines in vertical through-holes in a lattice-shaped magazine guide in positions corresponding to the positions of said adhesive layers, simultaneously pushing all of the magazines upwardly to positions where the top opening of each tubular magazine is in spaced opposed relation to the corresponding adhesive layer, stacking a plurality of chip type circuit elements in each tubular magazine; simultaneously pushing each circuit element stack upwardly in the tubular magazines for pressing the top circuit element in each circuit element stack onto the corresponding adhesive layer so as to bond said top circuit element to the corresponding adhesive layer; and urging one of the circuit elements in each of said tubular magazines against an inside vertical wall of the magazine by a plate spring inside the magazine.

10. A method for mounting chip type circuit elements on a printed circuit board, comprising: horizontally positioning a printed circuit board having a plurality of adhesive layers at predetermined positions on the bottom major surface thereof; arranging a plurality of hollow tubular magazines in vertical through-holes in a lattice-shaped magazine guide in positions corresponding to the positions of said adhesive layers, simultaneously pushing all of the magazines upwardly to positions where the top opening of each tubular magazine is in spaced opposed relation to the corresponding adhesive layer, stacking a plurality of chip type circuit elements in each tubular magazine; simultaneously pushing each circuit element stack upwardly in the tubular magazines for pressing the top circuit element in each circuit element stack onto the corresponding adhesive layer so as to bond said top circuit element to the corresponding adhesive layer; positioning a plurality of dummy magazines among said tubular magazines at positions which are out of correspondence with said adhesive layers and with the top end of each dummy magazine at a level higher than that of the top end of each tubular magazine; raising the dummy magazines with the tubular magazines for supporting the printed circuit board between the top ends of the dummy magazines and flatness correction pins projecting downwardly from a rigid flatness correction plate at positions corresponding to the positions of the dummy magazines for keeping the printed circuit board flat.

4,127,433

INSTALLATION FOR PRODUCING A MATERIAL FOR THE FINISHING AND DECORATING OF THE BUILDINGS

Constantin N. Gurgui; Vasile Luca; Andrei Eckardt, and Paraschiv I. Ciulacu, all of Bucharest, Romania, assignors to Intreprinderea "Bucuresti" Pentru Extragerea Prelucrarea si Montarea Marmurei si Pietrei de Constructii, Bucharest, Romania

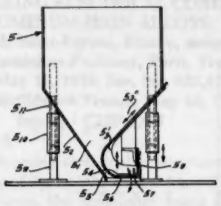
Continuation-in-part of Ser. No. 607,608, Aug. 25, 1975, Pat. No. 4,022,650, which is a division of Ser. No. 221,467, Jan. 27, 1972, Pat. No. 3,930,088, which is a division of Ser. No. 791,405, Jan. 15, 1969, Pat. No. 3,705,830. This application May 2, 1977, Ser. No. 792,907

Claims priority, application Romania, Jan. 20, 1968, 55659

The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.[2] B32B *31/12, 31/14, 35/00*

U.S. Cl. 156—498 **3 Claims**



1. An installation for continuously producing a material for the finishing and decorating of buildings, as a prefabricate flexible foil with the appearance of split natural crystalline stone, of the type in which a cover with several layers of granules is spread upon a supporting net and cover while bonding to each other and to the yarns of the supporting net by invisible fine pellicles of thermoplastic synthetic resin binder, said installation comprising:

means for priming the supporting net of natural textile fibers with thermoplastic synthetic resin dispersed in water and containing a fine filler of the granule material;

a first conveyor belt adjacent to said priming means for supporting and horizontally displacing the primed supporting net away from said priming means;

means for spreading and slightly pressing a granule cover of several layers of said granules, transversely over the whole width onto the primed supporting net supported and displaced by said first conveyor belt;

means for spraying, repeatedly and in excess, from above, over said granule cover and the primed supporting net, said binder of transparent, thermoplastic synthetic resin, dispersed in a liquid;

a heating tunnel, downstream of said first conveyor belt, and a second conveyor belt with large meshes extending through said tunnel for conveying therethrough the supporting net bearing said cover of sprayed granules, said tunnel being also provided, below said second conveyor belt, with an array of infrared heaters for the evaporation of said sprayed liquid thereby forming its thermoplastic resin into fine pellicles for bonding the resulting material

foil and slightly softening the fine pellicles thereof, by heating to a temperature of 80° to 120° C.;

a smooth roller for detaching the resulting material foil with the binder in the form of softened fine pellicles from the said second conveyor belt at the discharge end of said tunnel;

a pair of pressing rolls downstream of said heating tunnel, for the final compacting of said resulting warm material foil upon its being drawn between the foils; and

means downstream of said pressing rolls for cooling said material foil.

4,127,434

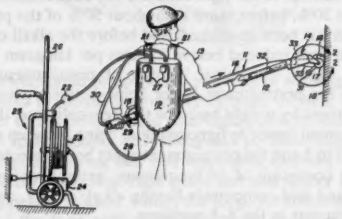
DRY WALL TAPING MACHINE HAVING PNEUMATIC ASSISTED OPERATION

Harold M. Lass, San Jose, Calif., assignor to Corban Industries, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 739,519, Nov. 8, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 815,838

Int. Cl.[2] B32B *31/00*; B44C *7/04*

U.S. Cl. 156—526 **14 Claims**



1. In a dry wall taping machine for applying tape to an elongated seam between adjoining sections of dry wall:

body means to be grasped by the operator for applying dry wall tape from a tape supply over a seam between adjacent sections of dry wall;

tape severing means carried from said body means for severing tape upon completion of the taping of a seam;

pneumatically powered means carried from said body means and mechanically operatively associated with said tape severing means for operating said tape severing means;

means for supplying pneumatic power to said pneumatically powered means;

control means carried from said body means and responsive to manual actuation by the operator for controlling the supply of pneumatic power to said pneumatically powered means and hence for controlling operation of said tape severing means;

dry wall cement dispensing means carried by said body means for dispensing dry wall cement onto the face of the dry wall tape which is to face the wall being taped; and

tape advance means mechanically operatively associated with said pneumatically powered means for automatically advancing the leading end of the severed tape through said dry wall cement dispensing means.

4,127,435

LABELING STATION OF A MACHINE FOR LABELING OBJECTS, ESPECIALLY BOTTLES

Rudolf Zodrow, Dusseldorf, Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Germany

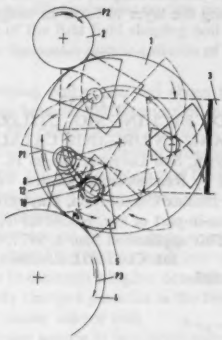
Filed Apr. 25, 1977, Ser. No. 790,358

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619068

Int. Cl.[2] B65C *9/16*; B65H *3/20*

U.S. Cl. 156—568 **3 Claims**

1. In a labeling station of a labeling machine for objects, such as bottles or the like of the type having a gripping cylinder rotatable in one direction, wherein the improvement comprises: a rotatable carrier, at least one gluing segment having a cylindrically curved pickup surface and mounted on the carrier for oscillatory movement about an axis of rotation disposed between the center of curvature of the cylindrically curved pickup surface and the pickup surface, to dispose the center of the pickup surface tangential to the gripping cylinder at the center of the oscillatory movement and means for accelerating and retarding the rotational speed of the gluing segment to effect the rolling of its pickup surface on the surface of the rotating gripping cylinder including means for rotating the gluing segment carrier in the same direction as that of the



gripper cylinder and means driving each gluing segment for rolling on the gripper cylinder to perform a rotatory movement whose direction of rotation is opposite that of the gluing segment carrier and of the gripper cylinder wherein each gluing segment swings in the one direction of rotation upon the rolling action and swings same back again before the next rolling action.

4,127,436

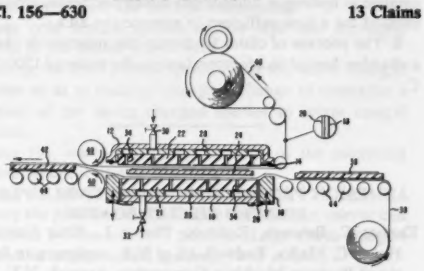
VACUUM LAMINATING PROCESS

Daniel D. Friel, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 568,904, Apr. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 513,112, Oct. 8, 1974, abandoned. This application Feb. 9, 1977, Ser. No. 767,062

Int. Cl.[2] C23F *1/02*

U.S. Cl. 156—630 **13 Claims**



1. A process for applying a photoresist-forming layer on a surface having raised areas such as a circuit board having circuit lines, comprising

(a) positioning one surface of a solid unexposed photoresist-forming layer adjacent to said surface having raised areas, while the other surface of said layer has adhered thereto with moderate-to-low adhesion, a thin, flexible, polymeric film support, said layer being weaker than said support,

(b) reducing the absolute gas pressure to less than one tenth atmosphere on the side of said layer adjacent to said surface having raised areas and on the side of said layer to which said film support is adhered,

(c) heating said layer to soften it,

(d) thereafter, while maintaining the reduced pressure on the

side of said layer adjacent to said surface having raised areas, pressing the photoresist-forming layer into intimate contact with the surface having raised areas, with said film support acting as the pressure-transmitting member to force the layer into conformation with the raised areas of the surface, and, in either order of steps (e) and (f),

(e) exposing the photoresist-forming layer, imagewise, to actinic radiation,

(f) stripping said film support from said layer, and

(g) developing the layer to form an image.

4,127,437

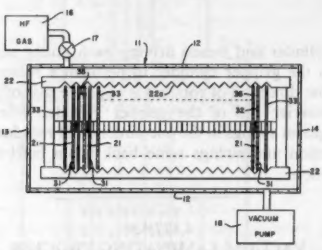
PROCESS FOR ETCHING SiO_2 UTILIZING HF VAPOR AND AN ORGANIC CATALYST

Richard L. Bersin, San Lorenzo; James H. Junkin, Hayward, and Richard F. Reichelderfer, Castro Valley, all of Calif., assignors to Dionex Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 686,373, May 14, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,930

Int. Cl.² H01L *21/308*

U.S. Cl. 156—635 **18 Claims**



1. In a process for removing SiO_2 from a substrate member, the steps of: placing an organic catalyst containing hydrogen and carbon but substantially no oxygen in in direct contact with the surface of the SiO_2 to be removed, and exposing the catalyst to hydrogen fluoride gas which permeates through the catalyst for a time sufficient to remove the SiO_2.

6. The process of claim 1 wherein the substrate is placed in a chamber heated to a temperature on the order of 150° C–200° C.

4,127,438

ADHESION PROMOTER FOR ADDITIVELY PLATED PRINTED CIRCUIT BOARDS

Thomas C. Babcock, Endicott; Theron L. Ellis, Vestal, and Henry C. Majka, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1977, Ser. No. 848,965

Int. Cl.² C23F *1/00*; C03C *23/00*; C23G *1/00*

U.S. Cl. 156—666 **11 Claims**

1. A method for treating a circuitized substrate wherein the circuitized substrate is made by additively plating copper on the substrate, to prepare the circuitized substrate for oxidation and subsequent lamination into a multilayer printed circuit board, comprising the steps of:

dipping the circuitized substrate in an etching bath;

baking the circuitized substrate at a temperature between 135° C. and 170° C.;

cleaning the surface of said circuitized substrate with an organic cleaner;

rinsing said circuitized substrate; and

drying said circuitized substrate.

4,127,439

PRETREATMENT OF LIGNOCELLULOSE WITH ANTHRAQUINONE PRIOR TO PULPING

John S. Fujii; William G. Whalley, both of Vancouver, and Fred L. Schmidt, Camas, all of Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 763,750, Jan. 28, 1977, abandoned. This application Jan. 3, 1978, Ser. No. 866,687

Int. Cl.² D21C *1/06*

U.S. Cl. 162—40 **4 Claims**

1. In a pulping process wherein lignocellulose is digested in an alkaline digestion liquor, the improvement which comprises pretreating the lignocellulose at a temperature between about 90° C. and 190° C. with a pretreatment agent in an aqueous pretreatment liquor having an alkali concentration (expressed as Na_2O) greater than 7 grams per kilogram of pretreatment liquor, and thereafter separating most of the pretreatment liquor from the lignocellulose prior to digesting the lignocellulose in the alkaline digestion liquor and reusing the separated pretreatment liquor to pretreat other lignocellulose, the pretreatment liquor being separated from the lignocellulose before the lignin content of the lignocellulose has been reduced more than about 20%, before more than about 50% of the pretreatment agent has been consumed, and before the alkali concentration has been reduced below 7 grams per kilogram of pretreatment liquor, the initial amount of pretreatment agent present in the pretreatment liquor being between about 0.02 and 2.0 percent by weight based on the lignocellulose, the ratio of pretreatment liquor to lignocellulose being between about 2 to 1 and 10 to 1 and the pretreatment agent being selected from the group consisting of anthraquinone, anthrahydroquinone, anthrone and said compounds having alkyl, alkoxy, amino or halo substituents in the 1–8 positions.

4,127,440

PROCESS FOR PURIFYING WASTE WATER OBTAINED BY A PAPERMAKING PROCESS

Lars O. Barkman, Lilla Edet, Sweden, assignor to Edet Aktiebolag, Lilla Edet, Sweden

Filed Jul. 10, 1975, Ser. No. 594,772

Claims priority, application Netherlands, Jul. 10, 1974, 7409304

Int. Cl.² D21F *1/82*

U.S. Cl. 162—190 **3 Claims**

1. In a papermaking process wherein an aqueous slurry containing paper pulp and non-fibrous material is prepared, the slurry is separated into (1) non-fibrous material and (2) an aqueous fibrous paper pulp suspension substantially free from non-fibrous material, the aqueous fibrous paper pulp suspension is fed to a papermaking machine where the paper pulp is separated from the water, a flocculating agent is mixed with the separated water, the resulting flocculent mass is screened to separate it into a fibrous mass and a water phase having non-fibrous solid waste suspended therein, the improvement comprising removing any fibers remaining in the water after the screening step by the method which comprises mixing the water from the screening step with the said non-fibrous material (1) as a filtering aid, and separating the resulting mixture into a filter cake of fibers and water which may be safely discharged into a stream.

4,127,441

PAPER MACHINE WIRE DRAPING SYSTEM

Wilhelmus J. Stegelitz, Lachine, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

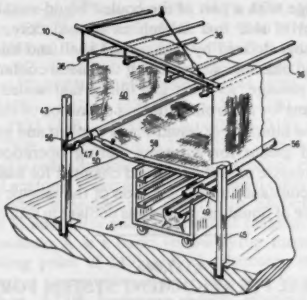
Filed Nov. 29, 1977, Ser. No. 855,712

Int. Cl.² D21F *1/26*

U.S. Cl. 162—200 **3 Claims**

1. In a method of stringing a wide endless belt, such as a paper machine fabric, for transverse insertion over the rolls of a pulp forming machine, the steps comprising inserting a plurality of substantially rigid poles to extend transversely

through the loop of the belt and beyond the edges thereof; positioning a rigid portable frame in spaced location above the belt, said frame having a plurality of pairs of pole supports to receive said poles in end supported, mutually spaced parallel relation thereon; lifting each said rigid pole to a respective pair of said supports while conveying a portion of said belt in supported relation thereon; securing said poles to the respective said supports; inserting within the loop of the belt a light-



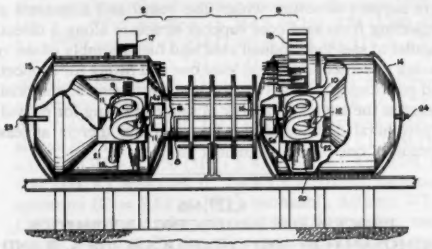
weight lower frame comprising a plurality of semi-rigid lightweight poles to extend transversely through the belt; connecting spacer means between said semi-rigid poles, to secure them in spaced apart relation; and raising said portable frame, to lift said rigid poles having said belt suspended thereon, whereby said loop raises said semi-rigid poles and said spacer means in freely supported relation within the loop, for transverse positioning of the loop within the plan view periphery of said forming machine.

4,127,442

CHARGE EXCHANGE COOLING IN THE TANDEM MIRROR PLASMA CONFINEMENT APPARATUS

B. Grant Logan, Danville, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1977, Ser. No. 807,082
Int. Cl.[2] G21B *1/00*
U.S. Cl. 176—3 **6 Claims**



1. A method of increasing the confinement time of a plasma of warm charged species confined through cooling of said species in the center mirror cell of a tandem mirror plasma confinement apparatus comprising:

a first end mirror cell comprising an array of current-carrying coils, arranged to produce a minimum B magnetic field of multi-Tesla strength at the current-carrying coils;

a second end mirror cell comprising an array of current-carrying coils, arranged to produce a minimum B magnetic field of multi-Tesla strength at the current-carrying coils;

a center mirror cell, positioned between the first end mirror cell and the second end mirror cell so as to enclose continuous magnetic field lines between the first end mirror cell and the second end mirror cell, the center mirror cell comprising a solenoid of discrete current-carrying coils;

the magnetic field strength at the current-carrying coils of the solenoid being less than the magnetic field strength at the current-carrying coils of the first or second end mirror cell;

a first field shaping coil positioned about the magnetic field lines passing between the interiors of the first end mirror cell and the center mirror cell so as to shape the magnetic field lines from an elliptical cross section on the first end mirror cell side of the first field shaping coil to a circular cross section on the center mirror cell side of the first field shaping coil;

a second field shaping coil positioned about the magnetic field lines passing between the interiors of the second end mirror cell and the center mirror cell so as to shape the magnetic field lines from an elliptical cross section on the second end mirror cell side of the second field shaping coil to a circular cross section on the center mirror cell side of the second field shaping coil;

a first neutral beam source to introduce energetic neutral species of the plasma to be confined into the first end mirror cell so as to maintain a higher density and temperature for positively charged particles in the first end mirror cell than in the center mirror cell;

a second neutral beam source to introduce energetic neutral species of the plasma to be confined into the second end mirror cell so as to maintain a higher density and temperature for the resulting positively charged particles in the second end mirror cell than in the center mirror cell;

a first target production means for generating a target plasma in the first end mirror cell for startup;

a second target production means for generating a target plasma in the second end mirror cell for startup;

a vacuum pumping means for evacuating the inside of the plasma confinement apparatus;

whereby the first end mirror cell and the second end mirror cell plasma each develop a net positive charge, the center mirror cell plasma develops a net negative charge, the first and second end mirror cell plasmas repel positively charged particles contained in the center mirror cell, and the end mirror cells electrostatically end stoppering the center mirror cell, the method comprising:

injecting cold neutral species into at least one mirroring region of the center mirror cell;

interacting the cold neutral species with the warm charged species so as to undergo charge exchange to neutralize a portion of the warm charged species to warm neutral species;

diffusing the warm neutral species out of the mirroring region where it was neutralized;

pumping the warm neutral species;

whereby the plasma to be contained in the center mirror cell is cooled by the loss of a portion of the warm charged species as warm neutral species.

4,127,443

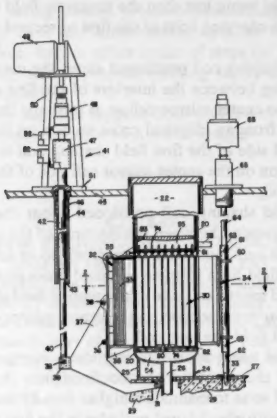
COMPACT POWER REACTOR

Joseph R. Wetch, Woodland Hills; Herman M. Dieckamp, and Lewis A. Wilson, both of Canoga Park, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1960, Ser. No. 26,904
Int. Cl.[2] G21C *3/42, 7/08*
U.S. Cl. 176—22 **8 Claims**

1. A nuclear reactor comprising a vessel, a core within said vessel, means in said core for producing an epithermal neutron

energy spectrum, said means including a liquid metal coolant and a plurality of fuel elements, each of said fuel elements



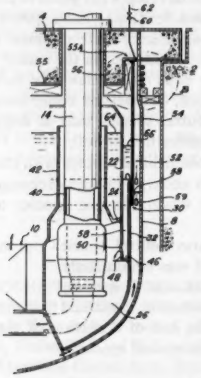
containing zirconium hydride and a fissionable material mixture, said zirconium hydride being in the delta phase.

4,127,444

DEVICE FOR THERMAL PROTECTION OF A NUCLEAR REACTOR VESSEL

Jean-Michel Gama, Orsay, and Lionel Paillard, Cachan, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 4, 1977, Ser. No. 784,561
Claims priority, application France, Apr. 6, 1976, 76 09924
Int. Cl.[2] G21C *11/00*
U.S. Cl. 176—38 **4 Claims**



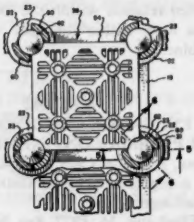
1. A nuclear reactor comprising a principal vessel, a vault roof closing said vessel, a reactor core within said principal vessel, fuel assemblies for said core, a support structure for said fuel assemblies mounted within said principal vessel, a liquid metal coolant for said fuel assemblies circulating through said fuel assemblies from bottom to top thereof, primary heat exchangers receiving heated liquid metal coolant from above said fuel assemblies, a lower zone in the said principal vessel receiving cooled liquid metal coolant from said heat exchangers in an inter-vessel space separated from a zone containing the hot metal by a primary vessel and pump in said principal vessel for circulating cooled liquid metal from said inter-vessel space under pressure to the bottom of said fuel assemblies, the improvement comprising apparatus for thermal protection of said principal vessel including a first shell between said primary vessel and said principal vessel, a lower edge for said shell connected to said support structure for said core, a free upper edge for said shell, a second shell between said first shell and said principal vessel, an upper edge for said second shell connected to said vault roof, a lower free edge for said second shell, the upper free edge of said first shell being located at a level above said lower free edge of said second shell, an annular passage in a lower part of said principal vessel between said first shell and said principal vessel, means for feeding said annular passage with a part of the cooled liquid-metal coolant at the bottom of said fuel assemblies of said core, a sealed annular chamber defined by said second shell and said principal vessel, said chamber surmounting the metal coolant within said annular passage, an inert gas filling said sealed annular chamber, means for controlling during operation of the reactor the level of the interface of liquid-metal coolant and gas in said chamber, and means for adjusting during operation of the reactor the pressure of said gas in said chamber for maintaining substantially constant during operation of the reactor the level of the interface of liquid-metal and gas coolant in said chamber.

4,127,445

PERIPHERAL PIN ALIGNMENT SYSTEM FOR FUEL ASSEMBLIES

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering Co., Inc., Windsor, Conn.

Filed Dec. 27, 1976, Ser. No. 754,625
Int. Cl.[2] G21C *7/20*
U.S. Cl. 176—87 **11 Claims**



1. An improved nuclear reactor fuel assembly for a nuclear reactor of the type having a vessel with a longitudinal axis, a core support structure within the vessel and alignment pins projecting from said core support structure along a direction parallel to said longitudinal axis, said fuel assembly of the type having a fuel section and at least one end fitting for supporting and positioning said fuel section, the improvement comprising: means at the lateral periphery of said end fitting for providing a peripheral depression and for receiving therein at least a portion of one of said alignment pins.

4,127,446

PROCESS FOR PRODUCING ANTIBIOTICS MIMOSAMYCIN AND CHLOROCARCINS A, B AND C

Tadashi Arai, Kojimachi Sanbancho Kondo 401, 3-2, Sanbancho, Chiyoda-ku, Tokyo, Japan

Division of Ser. No. 720,823, Sep. 7, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,697
Claims priority, application Japan, Sep. 19, 1975, 50-113289
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.
Int. Cl.[2] C12D *9/14*
U.S. Cl. 195—80 R **3 Claims**

1. A process for the production of antibiotic substances selected from the group consisting of mimosamycin and chlorocarcin A, chlorocarcin B and Chlorocarcin C and acid addition salts thereof, which comprises cultivating Streptomyces lavendulae strain No. 314, recovering a complex of chlorocar-

cins and mimosamycin from a cultured broth and then isolating mimosamycin and chlorocarcins A, B and C from said complex, wherein mimosamycin is a neutral yellow prism form which has a melting point of 227°-231° C.; a composition of 61.51% carbon, 4.79% hydrogen and 5.8% nitrogen; a molecular weight of 233 according to mass spectrum; an empirical formula of $C_{12}H_{11}NO_4$; an ultraviolet absorption spectrum shown in FIG. 1, UV λ_{max}^{MeOH} nm (log ϵ): 230 (shoulder (4.16), 317 (4.14), 396 (3.56), UV λ_{min}^{MeOH} nm (log ϵ): 277 (3.78), 370 (3.53); an infrared absorption spectrum shown in FIG. 2, IR ν_{max}^{KBr} cm^{-1}: 1685, 1655, 1635, 1585; an NMR spectrum ($CDCl_3$) shown in FIG. 3, δ: 2.10 (3H, s.), 3.69 (3H, s.), 4.20 (3H, s.), 7.12 (1H, s.), 8.28 (1H, s.); a rotary dispersion spectrum ($C = 4.37 \times 10^{-7}$, MeOH) of $[\phi]^{20}$ (nm): −1601 (500), −1373 (490), −1373 (480), −1144 (470), −1144 (460), −1144 (450 − 390), −1373 (380), −1144 (370 − 350), −1373 (340), −1831 (330, −2288 (320), −2288 (310), −1831 (300), −1601 (290), −2059 (280), −2517 (270), −3661 (260), −5492 (250); and is easily soluble in methanol, ethanol, chloroform, an ester and acetone, sparingly soluble in ethyl ether and n-hexane and insoluble in water; and positive to Ehrlich reagent and negative to ninhydrin and Dragendorff reagent;

chlorocarcin A is a basic yellow syrup form which has a melting point of 140°-144° C. (decomp., as its HCl salt form); a composition (as its HCl salt form) of 45.74% carbon, 4.73% hydrogen, 6.94% nitrogen and 16.14% chlorine, a molecular weight of 535 according to mass spectrum; an empirical formula of $C_{24}H_{26}N_3O_9Cl.2HCl.H_2O$; a specific rotation of $[\alpha]_D^{28} = -4°$ ($c = 1.0$, methanol); an ultraviolet absorption spectrum shown in FIG. 4, UV λ_{max}^{MeOH} nm (log ϵ): 268 (3.83), UV $\lambda_{min}^{MeOH\ nm\ (log\ \epsilon)}$: 238 (3.68), UV $\lambda_{max}^{0.1N\ HCl\text{-}MEOH}$ nm (log ϵ): 263 (3.85), UV $\lambda_{min}^{MeOH\text{-}0.1N\ HCl}$ nm (log ϵ): 234 (3.68); an infrared absorption spectrum shown in FIG. 5, IR $\nu_{max}^{CHCl_3}$ cm^{-1}: 1685, 1665, 1610; an NMR spectrum ($CDCl^3$) shown in FIG. 6, δ: 1.23 (3H, s.), 1.95, (3H, s., J=7 H_z), 2.26 (3H, s., J=7 H_z), 4.05 (3H, s.), 6.70 (1H, s.) and is easily soluble in ethyl ether, an ester, chloroform, acetone, an alcohol and 0.1 N HCl, sparingly soluble in n-hexane and 0.1 N NaOH and insoluble in water and positive to Dragendorff reagent and negative to ninhydrin, $FeCl_3$ and anthrone reagents, and a pharmaceutical acid addition salt thereof;

chlorocarcin B is a basic yellow powder form which has a melting point of 78°-81° C.; a composition of 60.89% carbon, 6.20% hydrogen, 6.71% nitrogen and 5.20% chlorine; a molecular weight of 553 according to mass spectrum; an empirical formula of $C_{29}H_{32}O_6N_3Cl.5/4H_2O$; an ultraviolet absorption spectrum shown in FIG. 7, UV λ_{max}^{MeOH} nm (log ϵ): 268.5 (4.25), 370 (3.38), UV λ_{min}^{MeOH} nm (log ϵ): 234 (3.99), 338 (3.34), UV $\lambda_{max}^{0.1N\ HCl\text{-}MeOH}$ nm (log ϵ): 262 (4.18), 380 (3.34), UV $\lambda_{min}^{0.1N\ HCl\text{-}MeOH}$ nm (log ϵ): 231 (3.95), 354 (3.32); an infrared absorption spectrum shown in FIG. 8, IR $\nu_{max}^{CHCl_3}$ cm^{-1}: 1715, 1683, 1655, 1612; an NMR spectrum ($CDCl_3$) shown in FIG. 9, δ: 1.28 (3H, m.), 1.92 (3H, s.), 2.04 (3H, s.), 2.27 (3H, s.), 2.50 (3H, s.), 4.04 (3H, s.), 4.08 (3H, s.), 4.42 (1H, s.), 6.84 (1H, d., J=8H_z); a circular dichroism spectrum ($C = 9.63 \times 10^{-5}$, methanol), $\Delta\epsilon$(nm): −2.45 (360) (negative maximum): −0.352 (320) (positive maximum): −13.0 (2.78) (negative maximum); and is easily soluble in an alcohol, chloroform, an ester, acetone, benzene and ethyl ether, sparingly soluble in n-hexane and insoluble in water and positive to Dragendorff and Meyer reagents and negative to ninhydrin and Ehrlich reagents, and a pharmaceutical acid addition salt thereof; and

chlorocarcin C is a basic yellow powder form which has a melting point of 79°-84° C.; a composition of 60.88% carbon, 6.11% hydrogen, 6.54% nitrogen and 6.71% chlorine; a molecular weight of 567 according to mass spectrum; an empirical formula of $C_{30}H_{34}O_6N_3Cl.3/2H_2O$; an ultraviolet absorption spectrum shown in FIG. 10, UV λ_{max}^{MeOH} nm (log ϵ): 268 (4.26), 368 (3.34), UV λ_{min}^{MeOH} nm (log ϵ): 231 (3.91), UV $\lambda_{max}^{0.1N\ HCl\text{-}MeOH}$ nm (log ϵ): 262.5 (4.22), 380 (3.40), UV $\lambda_{min}^{0.1N\ HCl\text{-}MeOH}$ nm (log ϵ): 228.5 (3.87), 351 (3.36); an infrared absorption spectrum shown in FIG. 11, IR $\nu_{max}^{CHCl_3}$ cm^{-1}: 1718, 1683, 1655, 1618; an NMR spectrum shown in FIG. 12; : 1.42 (3H, s.), 2.01 (3H, s.), 2.15 (3H, s.), 2.35 (3H, s.), 2.59 (3H, s.), 3.59 (3H, s.), 4.05 (3H, s.), 4.07 (3H, s.), 6.71 (1H, d., J = 8H_z); a circular dichroism spectrum ($C = 9.38 \times 10^{-5}$, methanol), $\Delta\epsilon$(nm): −3.88 (360) (negative maximum): −2.26 (310) (positive maximum): −24.5 (273) (negative maximum); and is easily soluble in an alcohol chloroform, an ester, acetone, benzene and ethyl ether, sparingly soluble in n-hexane and insoluble in water, and a pharmaceutical acid addition salt thereof.

4,127,447

BIOMASS GROWTH RESTRICTION IN A PACKED BED REACTOR

William L. Griffith, Oak Ridge, and Alicia L. Compere, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 3, 1976, Ser. No. 682,801
Int. Cl.[2] C12B *1/00*; C12C *11/08*; C02C *1/14*
U.S. Cl. 195—116 **14 Claims**

1. A process for carrying out a biologically catalyzed reaction comprising the steps of:

introducing an influent solution containing reactants into the lower section of an upflow packed bed column packed with a support material for microorganisms, said support material having attached thereto anaerobic microorganisms for catalyzing the reaction of said reactants;

introducing with said influent a membrane disruptive detergent to lyse dead microorganisms from said support and to make available the essential nutrient of said dead microorganisms to the remaining live microoganisms;

allowing said reactants to react under the influence of said anaerobic microorganisms; and

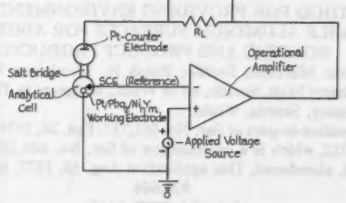
simultaneously with said steps of introducing and allowing restricting the presence of an essential growth nutrient within said influent solution to cause the population of said anaerobic microorganism to remain substantially constant and to prevent said anaerobic microoganisms from plugging said packed column.

4,127,448

AMPEROMETRIC-NON-ENZYMATIC METHOD OF DETERMINING SUGARS AND OTHER POLYHYDROXY COMPOUNDS

Karl G. Schick, 5050 N. 19th St., Milwaukee, Wis. 53209, and Calvin O. Huber, 707 W. Pioneer Rd., Mequon, Wis. 53092

Filed Feb. 28, 1977, Ser. No. 772,454
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—1 T **15 Claims**



1. A method for determination of hydrogen peroxide, sugars and other polyhydroxy compounds comprising providing the compound in an aqueous alkaline solution, applying a constant

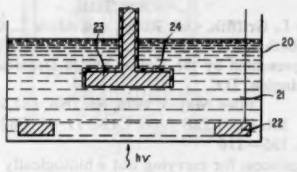
potential between a transition metal oxide catalyst electrode and a counter electrode immersed in the solution whereby electrocatalytic oxidation of the hydroxy compound occurs at the surface of the transition metal oxide electrode, and measuring the rise in current from the electrochemical oxidation.

4,127,449

LIQUID-SEMICONDUCTOR JUNCTION PHOTOCELLS

Adam Heller, Bridgewater, and Barry Miller, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1976, Ser. No. 739,471
Int. Cl.[2] H01M *4/04, 6/36*
U.S. Cl. 204—2.1 **2 Claims**



1. A method for making a photocell comprising: assembling together a cadmium or bismuth metal electrode, a counter electrode and an electrolyte as an electrolytic cell, the electrolyte comprising an anion selected from the group consisting of sulfide, selenide, telluride and mixtures thereof, and anodizing the metal electrode by application of an externally generated current to form an anodic chalcogenide coating to form in situ a liquid-semiconductor junction photovoltaic cell.

4,127,450

METHOD FOR PRETREATING SURFACES OF STEEL PARTS FOR ELECTROPLATING WITH ORGANIC OR INORGANIC COATINGS

Nazzareno Azzerri, and Alberto Tamba, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Sep. 27, 1976, Ser. No. 726,788
Claims priority, application Italy, Sep. 26, 1975, 51516 A/75
Int. Cl.[2] C25D *5/36*
U.S. Cl. 204—29 **1 Claim**

1. A method of producing on a steel part a tin plating of improved corrosion resistance, comprising the steps of immersing a steel part in an aqueous solution of sodium sulphate of a concentration from 0.5 M to 2.5 M and a pH of 6 to 8 at a temperature of 20° to 100° C., connecting the immersed part first as cathode for about two seconds and then as anode for about two seconds at a current density of 1 to 60 A/dm^2, and subsequently electrotinplating said part.

4,127,451

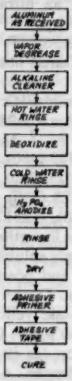
METHOD FOR PROVIDING ENVIRONMENTALLY STABLE ALUMINUM SURFACES FOR ADHESIVE BONDING AND PRODUCT PRODUCED

J. Arthur Marceau, Seattle; Ralph H. Firminhac, Kent, and Yukimori Moji, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 661,717, Feb. 26, 1976, Pat. No. 4,085,012, which is a continuation of Ser. No. 440,387, Feb. 7, 1974, abandoned. This application Aug. 15, 1977, Ser. No. 824,644
Int. Cl.[2] C25D *11/24*
U.S. Cl. 204—38 A **14 Claims**

1. A method of preparing an adhesively bonded aluminum structure comprising:

forming a porous columnar aluminum oxide coating on surfaces of aluminum alloy articles by anodizing said articles in an aqueous solution comprising phosphoric acid, the anodizing potential being from about 3 to about 25 volts, the phosphoric acid concentration being about 3 to about 20% by weight and the temperature of said solution being about 50° F. to about 85° F.;



rinsing said articles to remove said solution within 0.5 to 2.5 minutes from cessation of anodizing current;

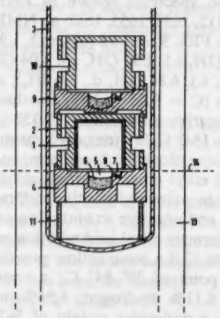
bonding said aluminum articles together to form said adhesively bonded structure.

4,127,452

METHOD FOR THE MANUFACTURE OF A SUPERCONDUCTIVE Nb_3Sn LAYER ON A NIOBIUM SURFACE FOR HIGH FREQUENCY APPLICATIONS

Hans Martens, deceased, late of Erlangen, Fed. Rep. of Germany (by Hildegard Martens, legal heir); by Harald Martens, legal heir, Erlangen, Fed. Rep. of Germany; by Rainer Martens, legal heir, Erlangen, Fed. Rep. of Germany; by Hans-Wolfgang Martens, legal heir, Aachen, Fed. Rep. of Germany; by Günter Martens, legal heir, Buckenhof, Fed. Rep. of Germany; by Sigrid Martens, legal, heir Nuremberg, Fed. Rep. of Germany; by Hannelore Martens, legal heir, and by Helmut Martens, legal heir, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,234
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1976, 2635741
Int. Cl.[2] C25D *5/00*; H01V *11/00*
U.S. Cl. 204—38 A **15 Claims**



1. In a method for the manufacture of a superconductive Nb_3Sn layer on a niobium surface for high frequency applications by diffusing tin into the niobium surface at elevated temperature, the improvement comprising:

(a) developing a tin vapor atmosphere which also contains a highly volatile tin compound in the gaseous state, the saturation vapor pressure of which in a temperature range between 200 and 1000° C. is substantially higher than that of the tin at the same respective temperature, by heating in the presence of a tin source; and,

(b) holding the surface portions to be provided with the Nb_3Sn layer at a temperature of between 900 and 1500° C. for a predetermined period of time in said atmosphere for forming the Nb_3Sn layer.

4,127,453
CONVERSION OF AVAILABLE ENERGY

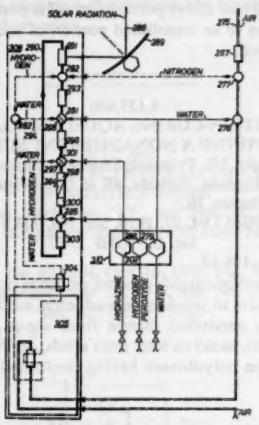
Reinhart Radebold, Quastenhornweg 14 a, 1 Berlin 22, Fed. Rep. of Germany

Filed Jan. 29, 1975, Ser. No. 545,133

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1974, 2405134

Int. Cl.² C25B *1/00*; C01B *21/16*

U.S. Cl. 204—59 R **50 Claims**



1. Method of producing hydrazine comprising the steps of:

mixing an alkali metal with hydrogen and nitrogen;

heating the metal with the mixed hydrogen and nitrogen and causing formation of metal amid as solution in the metal;

adding an inert gas to said solution to form a two-phase flow in which occurs intimate heat exchange between the gas and the heated solution, thereby heating the gas;

expanding the gas in the two-phase flow thereby causing the liquid to be accelerated by the expanded gas;

magnetically energizing the liquid phase of said flow to obtain electrolytic separation of the alkali metal from the amid under formation of diamid;

separating the diamid from the metal and returning the alkali metal for anewed mixing with hydrogen and nitrogen as per said mixing step; and

compressing, cooling and returning the compressed inert gas for continuing its use in said adding step.

4,127,454
PREPARATION OF BENZOTHIAZOLYLSULFENAMIDES

Sigeru Torii; Hideo Tanaka, and Masashi Ukida, all of Okayama, Japan, assignors to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

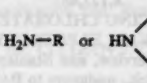
Filed Aug. 22, 1977, Ser. No. 826,794

Claims priority, application Japan, Oct. 5, 1976, 51-118981

Int. Cl.² C25B *3/02*; C07D *277/60*

U.S. Cl. 204—59 R **13 Claims**

1. A process for preparation of benzothiazolylsulfenamides, which comprises cross-coupling, via direct electrolytic oxidation, a member selected from the group consisting of 2-mercaptobenzothiazole, dibenzothiazyl disulfide and an alkali metal salt of 2-mercaptobenzothiazole wherein the alkali metal is sodium, potassium or lithium with a primary or secondary amine represented by the formula



wherein, R is a straight, branched or cyclic alkyl group having 3 to 8 carbon atoms, and R′ and R″ represent a straight, branched or cyclic alkyl group having 2 to 8 carbon atoms, respectively, or a heterocyclic ring in which R′ and R″ are fused together, said electrolytic oxidation being conducted in the presence of a solvent selected from the group consisting of dipolar aprotic solvents, protic solvents, water and mixtures thereof, and a supporting elecyrolyte adaptable to the solvent by using electrodes thereby to produce the benzothiazolylsulfenamide

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4,127,455
MANUFACTURE OF SYMMETRICAL CAROTENOIDS

Bernhard Schulz, Schwetzingen; Hans Grassner, Heidelberg; Peter Jaeger, Ludwigshafen, and Heinz Nohe, Meckenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,252

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1976, 2635802

Int. Cl.² C25B *3/02*; C07C *11/21*

U.S. Cl. 204—78 **4 Claims**

1. A process for the manufacture of symmetrical carotenoids from substituted or unsubstituted triaryl, tricycloaliphatic or trialkylphosphonium salts of the molecular halves of said carotenoids, in which said salts are anodicly oxidized at a current density of from 1 to 500 A/dm^2 in water or mixtures of water and a monohydric lower alcohol, a polyhydric lower alcohol, liquid ethers, liquid hydrocarbons or liquid chlorohydrocarbons as solvent and in the presence of a proton acceptor base, causing the molecular halves to dimerize, with elimination of substituted or unsubstituted triaryl, tricycloaliphatic or trialkyl phosphine oxide.

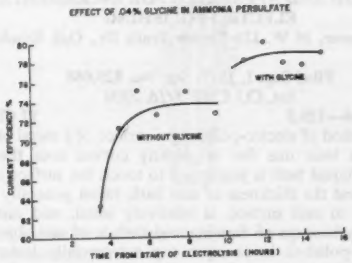
4,127,456
POLARIZER FOR THE ELECTROLYTIC PRODUCTION OF PEROXYDISULFATES

Kenneth J. Radimer, Little Falls, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 23, 1976, Ser. No. 753,757

Int. Cl.² C25B *1/28*

U.S. Cl. 204—82 **2 Claims**


EFFECT OF .04% GLYCINE IN AMMONIA PERSULFATE
WITH GLYCINE
WITHOUT GLYCINE
CURRENT EFFICIENCY %
TIME FROM START OF ELECTROLYSIS (HOURS)

1. In the process for the direct electrolytic production of sodium proxydisulfate or ammonium peroxydisulfate with high

current efficiencies in an electrolytic cell having a protected cathode by the direct electrolysis of an aqueous anolyte feed solution in the presence of a polarizer the improvement which comprises the use of glycine as the polarizer.

4,127,457

METHOD OF REDUCING CHLORATE FORMATION IN A CHLOR-ALKALI ELECTROLYTIC CELL

Michael Krumpelt, Riverview, and Stanley T. Hirozawa, Birmingham, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 751,845, Dec. 17, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,367

Int. Cl.² C25B *1/34*

U.S. Cl. 204—98 **7 Claims**

1. In a process wherein an aqueous alkali metal chloride solution is electrolyzed in an electrolytic cell having an anode compartment containing an anode and anolyte and a cathode compartment containing a cathode and catholyte and a substantially fluid impervious selectively permeable barrier separating the anode and cathode compartments and wherein said alkali metal chloride solution is continuously circulated through said anode compartment, the improvement comprising reducing chlorate formation in said anolyte by introducing an alkali metal chloride solution into said anode compartment and operating said cell at an alkali metal chloride conversion factor of between 40% and 80% and removing alkali metal hydroxide from said cathode compartment so as to maintain an alkali metal hydroxide concentration of about 15 percent to about 20 percent by weight.

4,127,458

TREATMENT OF EFFLUENTS

John J. MacGregor, Tokers Green, England, assignor to Matthey Rustenburg Refiners (Proprietary) Limited, Johannesburg, South Africa

Filed Jul. 12, 1977, Ser. No. 815,005

Claims priority, application United Kingdom, Jul. 13, 1976, 29093/76

Int. Cl.² C25C *1/20*

U.S. Cl. 204—109 **7 Claims**

1. A process for recovering platinum group metal present as a stable complex dissolved in an aqueous effluent from a platinum group metals refinery which comprises (1) adjusting the pH of the effluent as necessary to an alkaline pH of at least 10; (2) heating the effluent to a temperature above 60° C; (3) electrolyzing the effluent at said temperature and alkaline pH using an electrode comprising at least one metal selected from the group consisting of Ru, Rh, Pd, Ir, Pt and alloys thereof at an anode potential having a half-cell voltage of at least 7.5 volts and a current density of at least 0.2 A/cm^2 so as to break down said complex by anodic oxidation and precipitate metal present in the complex; and (4) filtering off the thus precipitated metal.

4,127,459

METHOD AND APPARATUS FOR INCREMENTAL ELECTRO-POLISHING

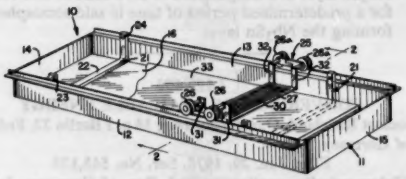
John F. Jumer, 16 W. 131 Timber Trails Dr., Oak Brook, Ill. 60521

Filed Sep. 1, 1977, Ser. No. 829,668

Int. Cl.² C25F *3/16, 7/00*

U.S. Cl. 204—129.5 **17 Claims**

1. A method of electro-polishing a surface of a metal object defining at least one flat or slightly curved area thereon wherein a liquid bath is positioned to touch the surface to be polished, and the thickness of said bath, taken generally perpendicular to said surface, is relatively small; said method comprising the steps of: framing said surface of said object to be electro-polished in an open top substantially leakproof structure, said structure being capable of supporting a shallow liquid bath above any horizontal surface to be electro-polished and capable of supporting a thin column of liquid bath touching any vertical surface to be electro-polished; depending a movable cathode from the top of said structure, said cathode including an active portion thereof which is contoured to be substantially parallel to said surface to be electro-polished and positioned in close spatial relation thereto; filling said open top structure with a liquid bath to a pre-determined level, said predetermined level allowing said liquid bath to cover said



cathode active portion; charging said surface to be electro-polished with a positive electric current; charging said cathode with a negative electric current to polish at least a portion of said surface; and moving said cathode across the top of said structure until said active portion thereof is positioned in close spatial relation to an unpolished portion of said surface to be electro-polished.

4,127,460

RADIATION-CURING AQUEOUS COATINGS PROVIDING A NONADHERENT SURFACE

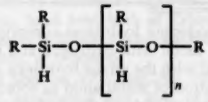
Joseph E. Gaske, Mt. Prospect; Eugene S. Packer, Chicago, and George J. England, Hillside, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 27, 1976, Ser. No. 735,970

Int. Cl.² C08F *2/50*

U.S. Cl. 204—159.13 **10 Claims**

1. An ultraviolet-curable aqueous emulsion coating composition which cures to provide a nonadherent surface comprising water having emulsified therein from about 2 to about 50 weight percent, based on total resin solids, of droplets of liquid alkyl hydrogen polysiloxane having the formula:



where *n* is a number from 4–30, R is an alkyl group containing from 1 to 4 carbon atoms, and the ratio of alkyl groups to hydrogen groups is from 1:2 to 2:1, said water having emulsified therein a liquid polyacrylate tertiary amine having a viscosity of at least 200 centipoises reacted with a solubilizing acid to produce a quaternary ammonium salt which disperses in water in the form of an emulsion having a pH in the range of 5.0–8.5, said aqueous emulsion including a photosensitizer rendering said composition curable with ultraviolet light.

4,127,461

PHOTO PROCESS FOR PREPARING MIXTURES WITH BUILDING TACK WHICH ARE BASED ON RUBBER-LIKE COPOLYMERS OF ETHYLENE

Hendrikus J. G. Paulen, Roosteren, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 517,052, Oct. 22, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,841

Claims priority, application Netherlands, Oct. 26, 1973, 7314796; Oct. 11, 1974, 7413445

Int. Cl.² C08F *8/00, 2/40*

U.S. Cl. 204—159.14 **33 Claims**

1. A process for preparing mixtures with building tack which are based on (1) a rubber-like copolymer of ethylene, at

least one other α-alkene, and one or more polyenes, and (2) a tackifying resin, comprising

exposing said mixture in the presence of oxygen and a compound effective as a photosensitizer under the conditions of the process to an artificial light source radiating light at a wave length of between 200 and 800 nanometers, and imparting a radiated energy to the mixture of at least 2 microwatts/cm^2 per nanometer;

wherein said mixture in the unvulcanized state and prior to said step of exposing, is characterized by an elongation at break of at least 500% and a tensile strength of between 1.5 and 50 kg/cm^2; and

wherein the copolymer of said mixture contains C=C bonds in the non-linear part of the polymer chain, wherein the carbon atoms of said C=C bonds either (a) have two hydrocarbon groups which are in a vicinal cis relative position to each other and which do not form part of the same system, or (b) have at least three hydrocarbon groups attached thereto; and

wherein said copolymer contains 50 to 85 mole % ethylene and 0.1 to 20% by weight of said polyene;

whereby said mixture is characterized by building tack after said step of exposing.

4,127,462

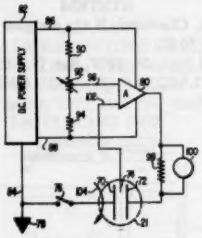
DEVICE FOR THE DETECTION AND MEASUREMENT OF NOXIOUS GASES

Keith F. Blurton, Yorktown, N.Y., and John M. Sedlak, Norwalk, Conn., assignors to Energetics Science, Inc., Elmsford, N.Y.

Division of Ser. No. 621,554, Oct. 10, 1975, Pat. No. 4,042,464. This application Mar. 10, 1977, Ser. No. 776,419

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—195 R **13 Claims**



1. An apparatus for detecting and measuring noxious gases selected from the group consisting of nitric oxide, nitrogen dioxide, sulfur dioxide, mercaptans and hydrogen sulfide, in the presence of carbon monoxide comprising in combination intake means, an electrochemical cell, means for drawing said gas through said intake means and into said electrochemical cell, the electrochemical cell comprising a sensing electrode, a counterelectrode and an aqueous electrolyte in contact with said sensing electrode and counterelectrode, said sensing electrode comprising a carbon supported gold catalyst, means for exposing said sensing electrode to said gas, means electrically coupled to said sensing electrode for maintaining said sensing electrode at a fixed potential of about 0.4 volt to about 1.5 volt with respect to a reversible hydrogen electrode in said electrolyte of said electrochemical cell and means for measuring current flowing from said sensing electrode to said counterelectrode which measured current is a measure of the concentration of the noxious gas being detected.

4,127,463

PROBE FOR AN ELECTROCHEMICAL OXYGEN MEASUREMENT PICKUP

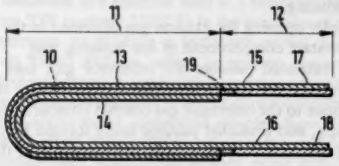
Franz-Josef Rohr, Abtsteinach, and Hubert Holick, Lampertheim, both of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Kafertal, Germany

Filed Jul. 15, 1977, Ser. No. 816,173

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632250

Int. Cl.^{2} G01N *27/58*

U.S. Cl. 204—195 S **5 Claims**



1. In a probe for an electrochemical oxygen measurement pickup having an oxygen ion-conducting solid electrolyte with electrodes and electrical contact points connected to the electrodes, the combination therewith of an electrochemically active region of the probe which has the electrodes and the oxygen ion-conducting solid electroltye for passage of oxygen ions through the solid electrolyte, and an electrochemically passive region of the probe which carries the contact points as well as their electrical connections to the electrodes, and wherein the passive region has a solid electrolyte on which the contact points and electrical connections are arranged, with the contact points spaced from each other as well as the electrical connections to the electrodes spaced from each other to require ions moving from one contact point to another and one connection to another to travel a long path, thereby reducing an interfering current, and wherein the active and passive regions are separated by an insulating layer which does not conduct ions or electrons.

4,127,464

SENSOR FOR DETECTING OXYGEN CONCENTRATION

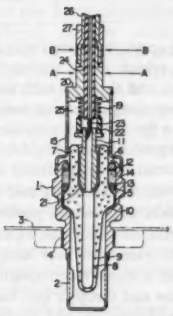
Norio Ichikawa, Mito, and Sadayasu Ueno, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1977, Ser. No. 756,714

Claims priority, application Japan, Jan. 23, 1976, 51-6900

Int. Cl.^{2} G01N *27/46*

U.S. Cl. 204—195 S **5 Claims**



1. A sensor for detecting an oxygen concentration in exhaust gas, which comprises:

(i) a housing,

(ii) an oxygen ion-transferable solid electrolyte partition wall hermetically provided in the housing, thereby partitioning

the housing into an exhaust gas contact compartment and a reference gas contact compartment,

(iii) catalyst electrodes provided on both sides of the solid electrolyte partition wall, one of said electrodes constituting an electrode on the side of the exhaust gas contact compartment and another of said electrodes constituting an electrode on the side of the reference gas contact compartment,

(iv) electrical conductors electrically connected to the respective catalyst electrodes for transmitting a difference in potential between the catalyst electrodes to the exterior of the housing,

(v) an inlet opening for exhaust gas provided in the exhaust gas contact compartment of the housing, and

(vi) an extended passage for reference gas, said passage having one end open to atmosphere and having the other end open to the reference gas contact compartment of the housing, said extended passage being formed by the electrical conductor connected to the electrode in the reference gas contact compartment and a waterproof insulation jacket surrounding said electrical conductor, said electrical conductor being a stranded conductor having a core at its inside.

4,127,465

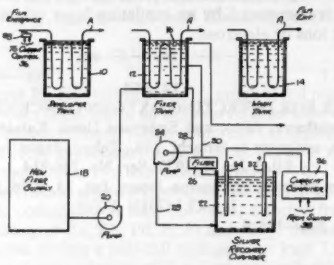
FILM PROCESSING APPARATUS FOR THE ELECTROLYTIC RECOVERY OF SILVER

David L. Higgins, Palos Verdes Estates, Calif., assignor to Ag-Met, Inc., Lofty, Pa.

Division of Ser. No. 534,159, Dec. 19, 1976, Pat. No. 3,980,538. This application Apr. 29, 1976, Ser. No. 681,605

Int. Cl.² C25D *21/12*; C25C *1/20*

U.S. Cl. 204—228 **11 Claims**



1. A film processing apparatus comprising a tank for containing a fixer bath into which silver containing materials pass from film moving into and through said bath, an electrically chargeable device, first charging circuit means connectable to said chargeable device for charging said chargeable device in one direction at a first predetermined rate during movement of film into said bath, second charging circuit means connectable to said chargeable device for charging said chargeable device in the opposite direction at a second predetermined rate following movement of film into said bath, a pair of electroplating electrodes mounted to extend into said bath, electrical current supply means arranged to cause electroplating current to flow through said electrodes and through said bath at a magnitude corresponding to the charge on said chargeable device and switch means responsive to movement of film into said bath and arranged to maintain said first charging circuit means connected to said chargeable device during movement of film into said bath and to maintain said second charging circuit means connected to said chargeable device following movement of film into said bath.

4,127,466

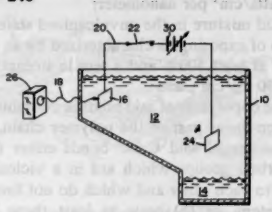
PHOTOELECTROCHEMICAL METAL PLATING AND PURIFICATION SYSTEM

Howard McKinzie, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 14, 1977, Ser. No. 850,926

Int. Cl.² C25C *1/00, 7/00*

U.S. Cl. 204—248 **5 Claims**



1. A photoelectrochemical metal plating and purification system comprising an electrolyte containing a reduction-oxidation couple, one component of said couple consisting of the cation of a metal to be plated or purified, a photoactive electrode coated with a photoactive semiconductor material immersed in said electrolyte, said photoactive semiconductor material responding to actinic radiation to establish an oxidation reaction at said photoactive electrode, said photoactive electrode electrically connected to a second electrode immersed in said electrolyte at some distance from said photoactive electrode, a reduction reaction being established at said second electrode complementary to said oxidation reaction at said photoactive electrode whereby said metal cations are reduced to elemental metal at said second electrode, and a means for directing actinic radiation on said photoactive electrode.

4,127,467

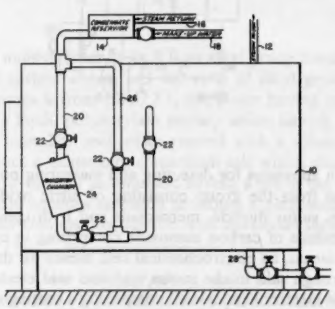
IONIZATION CHAMBER FOR WATER TREATMENT SYSTEM

Charles N. Smith, Charlotte, N.C., assignor to Water-Tronics, Inc., Charlotte, N.C.

Filed Nov. 28, 1977, Ser. No. 855,241

Int. Cl.² C25B *9/00, 15/08*; C02B *1/82*

U.S. Cl. 204—275 **8 Claims**



1. An ionization chamber for use in a water system to control the formation of scale, said ionization chamber comprising:

(a) a generally tubular housing formed of electrically conductive material, and having a longitudinally extending side wall and opposite end walls forming an enclosed chamber surrounded by said electrically conductive material, said enclosed chamber having an inlet conduit and an outlet conduit provided therein to permit liquid to flow through said enclosed chamber;

(b) an electrode mounted in said housing to extend there-

within, the electrically conductive portion of said electrode being substantially equally spaced from said side wall and said end walls of said housing at all points along said extent of said electrically conductive portion of said electrode; and

(c) an electrical source having one pole thereof electrically connected to said housing and having the opposite pole thereof connected to said electrode.

4,127,468

PROCESS FOR PREPARING A METAL ELECTRODE

Marinus Alfenaar, Schinnen, and Cornelis G. M. van de Moesdijk, Elsloo, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 9, 1976, Ser. No. 665,448

Claims priority, application Netherlands, Mar. 11, 1975, 7502841

Int. Cl.² C25B *11/00*

U.S. Cl. 204—284 **19 Claims**

1. A process for the production of a metal electrode comprising:

(a) contacting a basis-metal electrode with a solution which contains an alloying-element compound, said basis-metal electrode comprising a basis-metal which is present in a finely-divided or porous state and is selected from the group consisting of noble metals from Group VIII of the Periodic Table of the Elements or an alloy of at least one of the metals, said alloying-element being selected from the group consisting of an element from Group VIIB of the Periodic Table of the Elements or combinations thereof; and

(b) reducing in situ said alloying-element compound to form the free alloying-element whereby said alloying-element forms an alloy with said basis-metal.

4,127,469

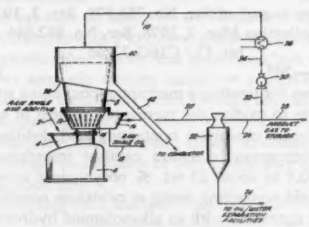
OIL SHALE RETORTING PROCESS

Dean A. Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 22, 1977, Ser. No. 826,321

Int. Cl.² C10G *1/02*

U.S. Cl. 208—11 R **8 Claims**



1. In a process for retorting arsenic-containing oil shale wherein a stream of oil shale particles is passed with an eduction gas through a retorting zone at elevated temperatures so as to educe shale oil vapors from said oil shale particles, which shale oil vapors are subsequently condensed and collected as liquid shale oil, the improvement comprising subjecting said arsenic-containing oil shale particles to elevated temperatures in said retorting zone in the presence of a nickel-containing additive so as to reduce the amount of arsenic present in the gases obtained from said retorting zone, thereby reducing the proportion of arsenic in the liquid shale oil product subsequently recovered by condensation.

4,127,470

HYDROCONVERSION WITH GROUP IA, IIA METAL COMPOUNDS

William C. Baird, Jr.; Roby Bearden, Jr., and Thomas H. Ledford, all of Baton Rouge, La., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Aug. 1, 1977, Ser. No. 820,859

Int. Cl.² C10G *13/04*; B01J *27/04*

U.S. Cl. 208—58 **7 Claims**

1. A process for hydrotreating a partially desulfurized petroleum oil feedstock in a reaction zone at a temperature ranging from about 500° to about 1500° F. in the presence of sufficient added hydrogen to produce a hydrogen partial pressure of from about 500 to 5000 psi, which comprises: contacting said feedstock in said reaction zone with a reagent consisting essentially of a compound selected from the group consisting of (a) at least one alkali metal compound selected from the group consisting of alkali metal oxides, alkali metal sulfides, alkali metal hydrosulfides, alkali metal amides, alkali metal carbonates, alkali metal carboxylates, and alkali metal alkoxides; (b) at least one compound selected from the group consisting of alkaline earth metal hydroxides, alkaline earth metal sulfides, alkaline earth metal hydrosulfides, alkaline earth metal amides, alkaline earth metal carbonates, alkaline earth metal alkoxides, and (c) a mixture of at least one alkali metal compound and at least one alkaline earth metal compound, said alkali metal compound being selected from the group consisting of alkali metal oxides, alkali metal hydroxides, alkali metal sulfides, alkali metal hydrosulfides, alkali metal amides, alkali metal carbonates, alkali metal carboxylates, alkali metal alkoxides and, wherein said alkaline earth metal compound is selected from the group consisting of alkaline earth metal oxides, alkaline earth metal hydroxides, alkaline earth metal sulfides, alkaline earth metal hydrosulfides, alkaline earth metal carboxylates and alkaline earth metal alkoxides.

4,127,471

HYDROCRACKING ALKYLAROMATIC-CONTAINING HYDROCARBONS AT MILD CRACKING CONDITIONS AND THEN SUBJECTING THE ALKYLAROMATIC HYDROCARBON TO ALKYL TRANSFER

Robert M. Suggitt, Wappingers Falls, and Sheldon Herbstman, Spring Valley, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jul. 28, 1977, Ser. No. 819,901

Int. Cl.² C10G *13/06*; C07C *15/02*

U.S. Cl. 208—60 **17 Claims**

1. The method of treating a charge stream containing (i) at least one alkylaromatic hydrocarbon having 6–12 carbon atoms and (ii) at least one hydrogen-deficient aromatic hydrocarbon having (8+n) carbon atoms and less than (10+2n)/(8+n) atoms of hydrogen per atom of carbon wherein *n* is an integer 0–8 which comprises

hydrocracking said charge stream at aromatic ring maintaining conditions in the presence of hydrogen and at least one heterogenous solid catalyst, having a mole ratio of silica-to-alumina SiO_2:Al_2O_3 of 0–12, containing at least one metal selected from the group consisting of rhenium, Group VI B and Group VIII metals on acidic support thereby converting said hydrogen-deficient aromatic hydrocarbon having less than (10+2n)/(8+n) atoms of hydrogen per atom of carbon to more desirable aromatic hydrocarbons containing more hydrogen than said hydrogen-deficient hydrocarbons;

withdrawing from said hydrocracking operation a hydrocrackate stream containing (i) at least one alkylaromatic hydrocarbon having 6–12 carbon atoms and (ii) less than about 0.3 w % (based upon the total said product stream) of said hydrogen-deficient aromatic hydrocarbon having less than (10+2n)/(8+n) atoms of hydrogen per atom of carbon wherein *n* is an integer 0–8;

contacting said hydrocrackate stream, at aromatic-ring-maintaining alkyl-transfer conditions, with a heteroge-

neous solid alkyl transfer catalyst, having mole ratio of silica-to-alumina atoms above about 12:1, and containing 0–10% of at least one Group VIII metal selected from the group consisting of nickel, cobalt, iron, platinum, palladium, rhodium, iridium, ruthenium, and osmium;

maintaining the content, in said hydrocrackate admitted to said contacting operation, of less than about 0.3 w % of said hydrogen-deficient aromatic compound thereby extending the effective life of said catalyst during said alkyl-transfer; and

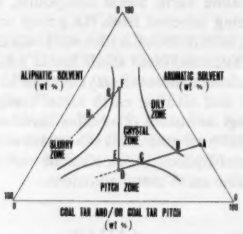
withdrawing product aromatic hydrocarbon from said alkyl transfer operation.

4,127,472

PROCESS FOR PREPARING A RAW MATERIAL FOR THE MANUFACTURE OF NEEDLE COKE

Wataru Migitaka, Kawasaki; Hirofumi Sunago; Yukiyosi Ogawa, both of Kitakyushu, and Takanori Nisihata, Buzen, all of Japan, assignors to Nittetsu Chemical Industrial Co., Ltd., Japan

Filed Nov. 22, 1977, Ser. No. 854,069
Claims priority, application Japan, Nov. 26, 1976, 51/141133
Int. Cl.[2] C10G *9/00, 21/06*
U.S. Cl. 208—87 **14 Claims**



1. A process for preparing a raw material for the manufacture of needle coke comprising the steps of mixing coal tar and/or coal tar pitch with aromatic and aliphatic solvents at atmospheric pressure and at a temperature between 15° C. and 140° C., with the mixing ratio of the aromatic and aliphatic solvents and their quantities of addition to the coal tar and/or coal tar pitch being adjusted so that insoluble substances precipitate in a pitch zone, distilling a supernatant obtained by separating the insoluble substances, obtaining hydrocarbons consisting substantially of aromatic compounds and freed of the insoluble substances, and using the hydrocarbons as the raw material for the manufacture of needle coke.

4,127,473

METHOD FOR THE THERMAL CRACKING OF HEAVY OIL

Hiroshi Hozuma; Hisatoshi Ohwada; Masaharu Tomizawa; Seiki Sanada, and Hideo Kikuchi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, both of, Japan

Continuation-in-part of Ser. No. 733,911, Oct. 19, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,200
Claims priority, application Japan, Oct. 20, 1975, 50-126276
Int. Cl.[2] C10G *9/36;* C10C *3/04;* C10G *9/16*
U.S. Cl. 208—130 **4 Claims**

1. A batch method for the thermal cracking of heavy oil comprising:

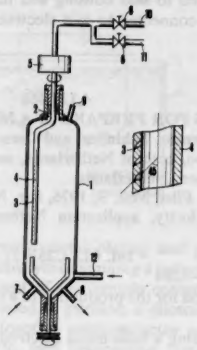
(a) providing a reactor having a rotary injection pipe, said pipe having means for spraying a fluid into the interior of the reactor;

(b) introducing a charge of heavy oil into the reactor;

(c) thermally cracking the heavy oil by contacting the heavy oil with superheated steam in the reactor;

(d) blowing an inert fluid through said spray means of said injection pipe during said thermal cracking to prevent clogging of said spray means;

(e) after withdrawal from said reactor of the thermally cracked charge, injecting preheated raw material at 300°–350° C. through said spray means of said injection pipe and against the interior wall surfaces of said reactor



while rotating said pipe in said reactor to remove coke which has deposited on the interior surfaces during said thermal cracking; and

(f) leaving the raw material injected into the reactor in step (e) to serve as a precharge for protection against thermal shock upon introduction of the next batch of raw material per step (b).

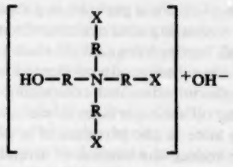
4,127,474

TREATING A PETROLEUM DISTILLATE WITH AN ALKANOLAMINE HYDROXIDE AND A SUPPORTED OXIDATION CATALYST IMPREGNATED WITH POLYNUCLEAR AROMATIC SULFONIC ACID

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 756,578, Jan. 3, 1977. This application Mar. 2, 1978, Ser. No. 882,844
Int. Cl.[2] C10G *27/06*
U.S. Cl. 208—207 **14 Claims**

1. A process for treating a mercaptan-containing sour petroleum distillate to oxidize the mercaptan present in said distillate, said process comprises contacting said distillate with a supported mercaptan oxidation catalyst impregnated with from about 0.1 to about 25 wt. % polynuclear aromatic sulfonic acid, said contacting being at oxidation conditions with an oxidizing agent and with an alkanolamine hydroxide represented by the structural formula

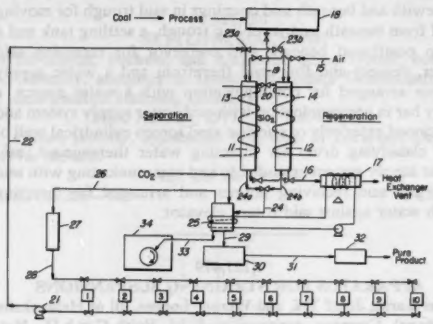


wherein R is an alkylene radical containing up to about 3 carbon atoms, and X is a hydroxyl radical or hydrogen.

4,127,475
PROCESS FOR THE ISOLATION OF CHEMICALS FROM PROCESSED COALS

Malvina Farcasiu, Princeton, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 14, 1977, Ser. No. 768,443
Claims priority, application Canada, Jan. 13, 1976, 243479
Int. Cl.[2] C10G *25/00*
U.S. Cl. 208—310 R **28 Claims**



1. A chromatographic method of resolving, into chemically differentiated fractions, such liquid derivatives of naturally occurring carbonaceous material as by virtue of their solvent-extractive or thermal derivation contain at least about 10% by weight asphaltenes and are substantially free of inorganic material, which method comprises the steps of:

(A) Introducing into a silica gel chromatographic column from about 5 to 20 percent, by weight of the silica in the column, of said derivatives;

(B) Successively eluting from the column fractions of said derivative by the sequential use, as eluant, of

(i) a mixture of about 95 to 75 parts by weight of a saturate selected from petroleum ether, udex raffinate, alkylate, and pure hydrocarbons having 5 to 10 carbon atoms and a straight-chain, branched-chain or cyclic structure; with about 5 to 25 parts by weight of an aromatic selected from benzene, toluene, xylenes and mixtures of aromatics derived from a reforming, coking or cracking process;

(ii) Chloroform;

(iii) a mixture of about 98 to 80 percent by weight of chloroform with 2 to 20 percent by weight of an acyclic aliphatic ether having less than 10 carbon atoms; and

(iv) an aromatic tertiary amine or a derivative thereof having a substituent selected from aliphatic hydrocarbon having 1 to 2 carbon atoms and cycloaliphatic having less than 7 carbon atoms; to obtain solutions in the respective eluants of four chemically differentiated fractions; and

(C) Recovering each fraction from its solution in its eluant.

4,127,476
AIR-CLASSIFICATION APPARATUS AND PROCESS FOR THE SEGREGATION OF MIXED OFFICE-PAPER WASTE

Fred D. Iannazzi, 45 Oriole Dr., Andover, Mass. 01810, assignor to Fred D. Iannazzi, Andover and Richard P. Crowley, Wellesley, both of, Mass.

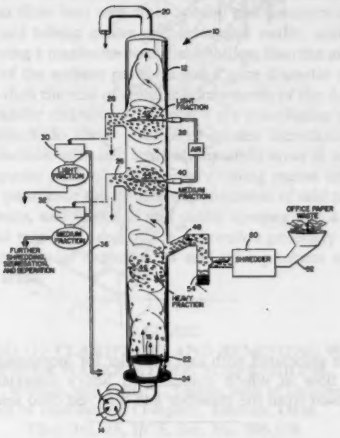
Filed Jun. 13, 1977, Ser. No. 805,967
Int. Cl.[2] B03B *4/00*
U.S. Cl. 209—3 **10 Claims**

1. A process for the segregation and separation of mixed office-paper-waste material, which process comprises:

(a) shredding the waste material into waste material of substantially uniform size;

(b) introducing the shredded waste material into a vertically disposed fractionating column;

(c) passing high-volume, low-pressure air upwardly through the column to form a fluidized bed within the column of the shredded waste material, the bed containing at least



one discrete segregated layer of the segregated shredded waste material;

(d) removing the segregated waste material from the discrete layer by flowing high-pressure low-volume air to cause lateral flow of the segregated waste material across the discrete layer to a discharge outlet in the column; and

(e) recovering the removed segregated waste material.

4,127,477
HIGH CAPACITY MATERIALS SEPARATION APPARATUS

Ernst F. R. A. Schloemann, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 632,609, Nov. 17, 1975, abandoned. This application Dec. 9, 1976, Ser. No. 748,843
Int. Cl.[2] B03C *1/30*
U.S. Cl. 209—39 **4 Claims**

1. Materials separating apparatus for separating items of electrically conductive material from a supply of commingled materials comprising the combination of:

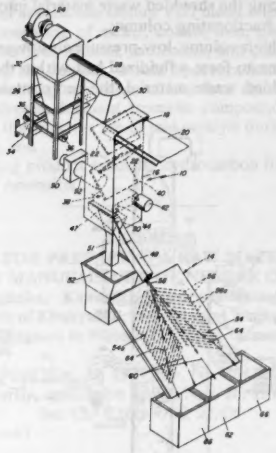
a vertical air classifier for receiving commingled light and heavy materials;

means for directing flow air upwardly through said classifier for entrainment and removal therein of light fractions, and for deposit of the remaining heavy fractions in the bottom of the classifier;

an inclined ramp located adjacent the lower end of said classifier and containing immovable steady-state magnetic means for establishing an alternating series of oppositely directed parallel magnetic fields transversely at an angle oblique to the length of the ramp;

guide means connected to the classifier for receiving the commingled heavy materials from the classifier and forming them into a stream and directing said stream at a predetermined rate of flow onto the surface of said ramp adjacent its upper end whereby said heavy materials will flow down the ramp sequentially through the magnetic fields whereupon eddy currents will be induced in electrically conductive items to produce force components

which deflect the electrically conductive items out of said stream; and



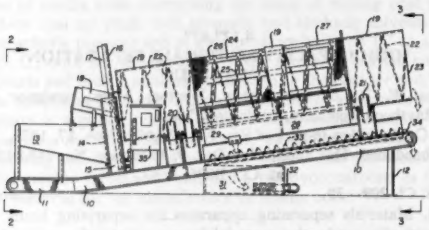
means associated with said classifier for increasing said rate of flow at which commingled heavy materials are removed from the classifier and directed onto said ramp.

4,127,478

MACHINE FOR SALVAGING WASTE CONCRETE MATERIAL

William F. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio

Filed Mar. 4, 1977, Ser. No. 774,320
Int. Cl.[2] B07B *1/24*
U.S. Cl. 209—240 **8 Claims**



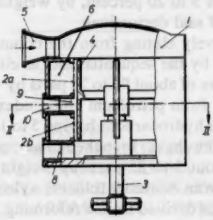
1. In a machine for separating and salvaging cement, fine and coarse sand and aggregate from wet concrete material and water having an inclined frame, a classifying drum mounted for axial rotation above and parallel with said inclined frame and means for rotating said classifying drum; the improvement comprising forming said classifying drum with a first section adjacent its lower end incorporating an unbroken cylindrical wall, a second section adjacent thereto incorporating a fine sand screen cylindrical wall, a third section adjacent said second section incorporating a coarse sand screen cylindrical wall and a fourth section adjacent thereto incorporating an unbroken cylindrical wall with an open end, a spiral conveyor in said classifying drum attached to and extending continuously throughout said classifying drum, a receiving hopper and a well on said frame at the lower end thereof and adjacent the lower end of said classifying drum for receiving said wet concrete material and water, said hopper communicating with said well, a rotary elevator attached to the first section of said classifying drum for rotation therewith and partially disposed within said well and valve means comprising a movable apertured disc controlling communication between said hopper and said well, a discharge chute positioned through a central opening in said rotary elevator and extending into said first section of said classifying drum and arranged to receive said concrete material and water delivered thereto by said rotary elevator from said well and deliver said concrete material and water into said first section of said classifying drum, a receiving trough disposed under the screen cylindrical walls of said classifying drum for receiving water, cement and coarse and fine sand passing therethrough, openings in said receiving trough and a conveyor positioned on said frame and parallel therewith and beneath said openings in said trough for moving sand from beneath said receiving trough, a settling tank and a sump positioned beneath said conveyor for receiving said water, cement and fine sand therefrom and a water supply system arranged for communication with a water source, a spray bar in communication with said water supply system and positioned exteriorly of said fine sand screen cylindrical wall of said classifying drum for directing water thereagainst, said water supply system extended to and communicating with said well and said receiving hopper and arranged for directing wash water against said rotary elevator.

4,127,479

APPARATUS FOR STRAINING SUSPENSIONS

Klaus Kurth; Josef Trü, and Werner Lorenz, all of Heidenheim (Brenz), Germany, assignors to J. M. Voith G.m.b.H., Heidenheim, Germany

Continuation of Ser. No. 676,231, Apr. 12, 1976, abandoned, which is a continuation of Ser. No. 515,611, Oct. 17, 1974, abandoned. This application Aug. 24, 1977, Ser. No. 827,396
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1973, 2355767
Int. Cl.[2] B07B *1/20*
U.S. Cl. 209—273 **10 Claims**



1. An apparatus for straining a liquid suspension containing suspended contaminants, comprising:

a housing defining an axis and an interior volume, said housing including a sole inlet at one part thereof for receiving unstrained liquid suspension and including a sole drain located at another part of said housing, downstream and axially remote from said sole inlet, for discharging strained liquid suspension, said housing further defining a coaxial annular chamber extending around said volume at an intermediate axial position between said sole inlet and said sole drain;

a rotationally symmetric, substantially cylindrical sectional screen basket disposed in said interior volume of said housing coaxially with said housing and having sections extending on either side of said annular channel and defining a continuous interior space which communicates with said sole inlet and with said annular channel substantially entirely around the inner periphery of said channel;

at least a first and a second separate outlet communicating with said interior space for removing strained-out contaminants and solid matter from said housing, said first outlet being located in said housing in a position axially remote from said inlet and said second outlet being located at said intermediate axial position between said sole inlet and said

first outlet and communicating with said interior space and said annular chamber; and

a sole rotatable impeller equipped with purging blades for sweeping and clearing the inside wall of said screen basket and means for holding and rotating said impeller, said purging blades extending axially and continuously along said screen basket and across said annular chamber; whereby said purging blades push trapped contaminants radially into said annular chamber.

4,127,480

SETTLING MACHINE

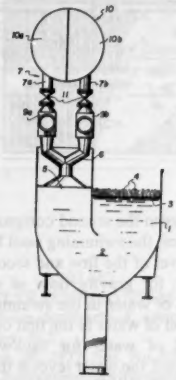
Willi Aldick, Bochum, and Alexander Lotz, Wetter, both of Germany, assignors to Damin Mineralien Gesellschaft mit beschrankter Haftung, Germany

Filed Nov. 29, 1977, Ser. No. 855,733

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654593

Int. Cl.² B03B *5/20*

U.S. Cl. 209—457 **8 Claims**



2. A settling device for upgrading materials, particularly for upgrading coal, comprising at least one settling chamber filled with water, a jig screen covering at least a portion of said chamber substantially at the water level in said chamber, means for feeding the material to be upgraded onto said jig screen, a plurality of sources of compressed air at different predetermined pressures, and pulsation control means connected between said sources and said settling chamber for superimposing pulsations of the air under diverse pressures at diverse frequencies on the water level of said chambers.

4,127,481

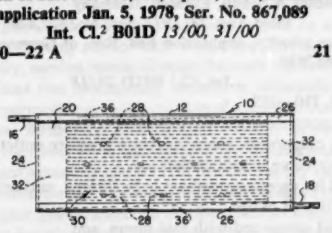
DEVICE AND METHOD FOR EFFECTING FLUID INTERCHANGE FUNCTIONS

Paul S. Malchesky, Painesville Township, Lake County, and Yukihiko Nose, Cleveland Heights, both of Ohio, assignors to Japan Foundation for Artificial Organs, Cleveland, Ohio

Continuation of Ser. No. 672,720, Apr. 1, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,089

Int. Cl.² B01D *13/00, 31/00*

U.S. Cl. 210—22 A **21 Claims**



1. A device for effecting fluid interchange functions or the like including a substantially rigid casing defining an interior cavity, inlet means for fluid into said cavity, and outlet means for fluid from said cavity, capillary tubing means comprising a plurality of strands of capillary tubing having a particulate solid sorbent disposed therein within the lumen of the respective strand, said strands being anchored in said cavity, said tubing means being semi-permeable to permit interchange coaction between the sorbent in the tubing means and fluid adapted to flow into said inlet around the exteriors and not through said tubing means and from said outlet, said tubing means having a maximum pore diameter less than the minimum diameter of the sorbent particles and a pore diameter substantially less then the size of cellular components of the fluid, and having transfer characteristics which are non-plasma generating but which do allow passage of solutes therethrough for transfer reaction with said sorbent, manifold areas in said cavity on opposite sides of said capillary tubing means extending generally parallel to the direction of extension of said capillary tubing means, said inlet and said outlet opening into a respective of said manifold areas and in a direction generally parallel to the direction of extension of said tubing means and said manifold areas.

4,127,482

METHOD OF CLARIFYING AND REMOVING WATER FROM WATER-SOLIDS SUSPENSIONS

Jimmie L. Watson, and Patsy L. Totten, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 16, 1976, Ser. No. 706,104

Int. Cl.² C02B *1/20*

U.S. Cl. 210—53 **4 Claims**

1. A method of clarifying and removing water from a sump containing water having drilling solids suspended therein comprising the steps of:

dispersing an aqueous solution containing a non-ionic polyacrylamide flocculating agent in an amount in the range of from about 0.4 to about 1.2 percent by weight into said water solids suspension in an amount in the range of from about 0.00023 to about 0.452 gallons per gallons of water-solids suspension;

dispersing an aqueous solution containing an anionic polyacrylamide flocculating agent in an amount in the range of from about 0.4 to about 1.2 percent by weight into said water-solids suspension in an amount in the range of from about 0.00001 to about 0.226 gallons per gallon of water-solids suspension to thereby form said suspended drilling solids into flocculent masses of a size in the range of from about 0.1 to about 0.4 centimeters in diameter; and

withdrawing water from said sump through a screen of a size in the range of from about 10 to about 20 mesh (U.S. Sieve Series) whereby clarified water is continuously removed from said sump without removing said flocculent masses, wherein said screen is connected to a suction means and placed near the bottom of said sump.

4,127,483

TREATMENT OF AQUEOUS SYSTEMS

Malcolm J. Smith; Peter Miles, both of Stockport; Norman Richardson, Manchester, and Michael A. Finan, Macclesfield, all of England, assignors to Ciba Geigy (UK) Limited, England

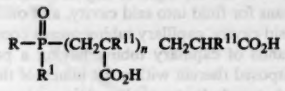
Division of Ser. No. 582,402, May 29, 1975, Pat. No. 4,046,707. This application Dec. 29, 1976, Ser. No. 755,605

Claims priority, application United Kingdom, Jun. 11, 1974, 25853/74

Int. Cl.² C02B *5/06*

U.S. Cl. 210—58 **6 Claims**

1. A method of inhibiting the precipitation of the scale forming salts of calcium, magnesium, barium and strontium from aqueous systems comprising adding to the aqueous system a scale inhibiting amount in the range of 1–200 ppm of a product comprising a telomeric compound of the formula:



I

or salts thereof, wherein R^{11} is hydrogen or a methyl or ethyl residue and n is a positive integer of at most 100, R is hydroxyl and R^1 is hydroxyl.

4,127,484

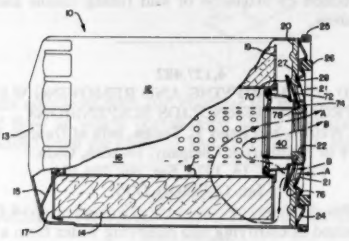
FILTER RELIEF VALVE ASSEMBLY

Albert B. Walulik, Cranford; John G. Charney, Colonia; Donald A. Turk, Sewaren; Raymond D. Lewandowski, New Providence, and Charles G. Pickett, North Plainfield, all of N.J., assignors to Purolator, Inc., Rahway, N.J.

Filed Sep. 9, 1977, Ser. No. 831,871

Int. Cl.[2] B01D *27/10*

U.S. Cl. 210—130 **24 Claims**



1. A fluid filter having a fluid-tight canister having a cylindrical filter element contained therein, said filter element having a center tube therein, a closure disc at one end of the canister having a fluid inlet and fluid outlet therethrough, the improvement comprising:

means for engagement with said filter element mountable within one end of the center tube thereof, additional means for engagement and alignment with said closure disc for permitting fluid flow through associated openings thereof, and further means associated with the aforesaid means for permitting fluid flow to bypass said filter element when pressure of said fluid exceeds a predetermined given amount, the means for engagement with said filter element including an axially extending tubular member having a radially inwardly extending flange formed with a preset angle with respect to the center line axis of said tubular member, said further means for permitting fluid flow when pressure of said fluid exceeds a predetermined amount includes a resilient conical shaped gasket member, said gasket member being mounted between the radially inwardly extending flange with preset angle of said axially extending tubular member and a second tubular member having a rolled inner end flange abutting against the gasket member on the opposite side thereof from the angled flange in order to pre-stress the conical gasket member against the pressure of fluid.

4,127,485

VACUUM FILTER FOR SWIMMING POOLS

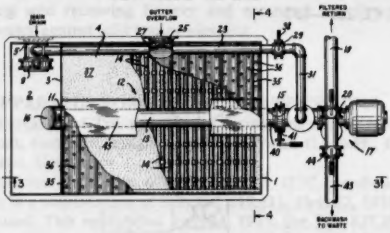
William H. Baker, 30 Honeysuckle Woods, Clover, S.C. 29710, and Frederick Wall, 707 Belleview Rd., Rock Hill, S.C. 29730

Filed Jul. 5, 1977, Ser. No. 812,978

Int. Cl.[2] E04H *3/20*

U.S. Cl. 210—169 **16 Claims**

1. A vacuum filter-swimming pool combination for vacuum flow filtration through a filter bed of water from a swimming pool, the swimming pool comprising a perimeter gutter and a water recirculation system having line connections from the pool and from the gutter to the vacuum filter and from the vacuum filter back to the pool, the vacuum filter comprising a tank open to atmospheric pressure; a dividing wall across the tank, separating the tank into first and second compartments; a filter bed of particulate material in the second compartment; first and second fluid flow connections communicating the two compartments, the first adjacent an upper portion and the second adjacent a lower portion of the filter bed; third and fourth fluid flow connections communicating the second compartment with the water recirculation system for the swimming pool, the third adjacent an upper portion and the fourth adjacent a lower portion of the filter bed; an inlet line communicating the swimming pool with the first compartment; a direct inlet line connection communicating the perimeter gutter of the swimming pool with the second compartment; and valves controlling flow between the compartments via the fluid flow connections, between the first compartment and the



inlet line, and between the second compartment and the water recirculation system; the swimming pool being at a level equal to or above the level of the first and second compartments of the vacuum filter, for gravity flow of water therebetween, whereby the level of water in the swimming pool maintains a corresponding level of water in the first compartment, thereby providing a head of water for backwash flow upwardly through the filter bed; the water level in the filter compartment being maintained by the pressure head in the swimming pool at a first normal level, and flow from the gutter into the filter compartment increasing the water level in the filter compartment above the first normal water level with a resultant throttling effect on flow from the swimming pool into the compartment in proportion to increased gutter flow, and reserving a sufficient capacity in the water recirculation system to accommodate increased gutter flow, and prevent flooding of the gutter.

4,127,486

APPARATUS FOR THE PRESSURE IMPINGEMENT OF A PRESSURE FILTRATION CELL

Wolfgang Hein; Claus Cosack, both of Dassel, and Peter Grundmann, Konigswinter, all of Germany, assignors to Carl Schleicher & Schull, Einbeck, Germany

Filed Aug. 24, 1977, Ser. No. 827,429

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657030

Int. Cl.[2] B01D *29/38*

U.S. Cl. 210—219 **5 Claims**

1. A pressure filtration apparatus comprising:

a gas compressor pump having a pressure outlet and a one-way valve in said outlet;

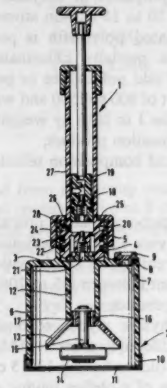
a cell for receiving medium to be filtered, said cell including:

a filtered outlet,

a lid connected with said pump, and

gas conducting means communicating with said outlet, said gas conducting means comprising an immersion

pipe communicating with said outlet and a cone at the bottom of said immersion pipe;



said cone including a gas outlet disposed at the bottom of said cell above and closely adjacent said filter.

4,127,487

FILTRATION SYSTEM

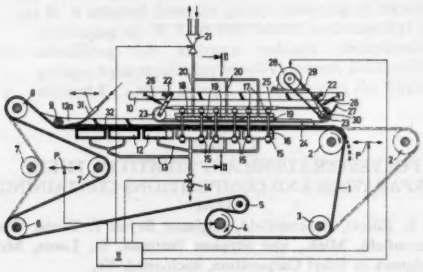
Paul Havalda, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 30, 1977, Ser. No. 838,282

Claims priority, application Switzerland, Oct. 5, 1976, 12579/76

Int. Cl.[2] B01D *33/32*

U.S. Cl. 210—350 **13 Claims**



1. A filtration system for filtering cake formed on a travelling belt comprising a filter belt, means for driving the belt intermittantly, suction means disposed beneath the belt, a press having at least one horizontally stationary, substantially uniformly gas-permeable pressure cushion of a resilient material of construction, means for moving said cushion towards and away from the filter belt in the region of the suction means, and control means actuating said suction means to apply suction to the cake formed on said belt and actuate said press to press the cushion against cake formed on the filter belt to halt the belt; said cushion functioning to simultaneously press and substantially uniformly permeate gas through said cake.

4,127,488

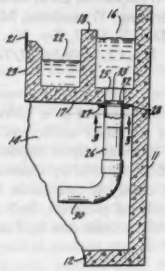
METHOD AND APPARATUS FOR SEPARATING SOLIDS FROM LIQUIDS

James A. Bell, Prairie Village; Robert B. Higgins, Lenexa; Donald G. Mason, Overland Park; John C. Weaver, Olathe, and Marvin E. Wood, Lenexa, all of Kans., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed Oct. 17, 1977, Ser. No. 842,850

Int. Cl.[2] C02C *1/18*; B01D *21/24*

U.S. Cl. 210—519 **15 Claims**



1. Apparatus for separating solids from liquids by gravitational settling of such solids in the liquid, comprising:

(a) a settling tank having an upstanding peripheral side wall;

(b) an inlet trough for a mixture of such solids and liquid adjacent the upper end of said side wall, there being a plurality of spaced holes passing through said trough and communicating with the inside of said settling tank;

(c) means for selectively controlling and individually changing the size of each of said holes;

(d) an outlet for clarified liquid; and

(e) an outlet for solids settled from said liquid.

4,127,489

PROCESS FOR MAKING IMIDAZOLINIUM SALTS, FABRIC CONDITIONING COMPOSITIONS AND METHODS

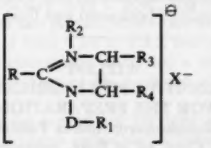
Hans J. Pracht, Sycamore Township, Hamilton County, and Joseph P. Nirschl, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 687,951, May 20, 1976, abandoned. This application Jul. 27, 1976, Ser. No. 708,980

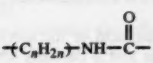
Int. Cl.[2] D06M *13/34*

U.S. Cl. 252—8.8 **16 Claims**

1. A fabric conditioning composition comprising a quaternary imidazolinium salt of the following structure:



wherein R and R_1 are aliphatic or cycloaliphatic hydrocarbon groups having from about 10 to about 22 carbon atoms, R_2 is an alkyl, substituted alkyl or aralkyl having from 1 to about 8 carbon atoms, R_3 and R_4 are hydrogen, hydroxy, short chain alkyl having from 1 to about 4 carbon atoms or hydroxy short chain alkyl having from 1 to about 4 carbon atoms, D is



wherein *n* is a number from 1 to about 6, and X is an anion; said composition containing a total less than about 4% of primary amines, secondary amines and cyclic tertiary amine salts based on the weight of the imidazolinium salt and less than about 25% of an alkoxylated form of the imidazolinium salt based on the weight of said salt.

4,127,490

FIBER FINISH COMPOSITIONS

David D. Newkirk, Woodhaven; Basil Thir, Wyandotte, and Robert B. Login, Woodhaven, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 5, 1977, Ser. No. 857,425

Int. Cl.[2] D06M *13/18*

U.S. Cl. 252—8.9 . 18 Claims

1. A textile treating composition consisting essentially of a mixture of (1) a major amount of a lubricant and (2) a minor effective amount of stabilizer sufficient to prevent oxidative degradation of said lubricant upon exposure to heat said stabilizer a reaction product formed by reacting, in the presence of Friedel-Crafts type catalyst, one mole of dicyclopentadiene and at least one mole of p-cresol, and further reacting said reaction product with at least one half mole of isobutylene.

4,127,491

HYBRID LUBRICANT INCLUDING HALOCARBON OIL

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y., a part interest

Continuation-in-part of Ser. No. 708,222, Jul. 23, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,805

Int. Cl.[2] C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—16 20 Claims

1. A hybrid lubricant in a minor amount which is dilutable by a major amount of a conventional fluid oil lubricant to provide a working lubricant applicable to metal rubbing surfaces, such as those found in internal combustion engines or other mechanisms having rotating or moving parts and functioning in the environment of the rubbing surfaces to develop a layer of solid lubricant on these surfaces, said hybrid lubricant comprising:

A. a colloidal aqueous dispersion of polytetrafluoroethylene particles;

B. a neutralizing agent added to said dispersion in an amount stabilizing the dispersion to prevent agglomeration of the particles;

C. a fluid oil lubricant carrier intermingled with the stabilized dispersion to form an emulsion therewith, said emulsion including a dispersant to effect homogenization thereof; and

D. a wetting agent added to said emulsion having an affinity for the rubbing surfaces to render the surfaces conductive to impregnation by said particles and to the fusion thereof to said surfaces to develop a solid lubricant layer thereon formed of polytetrafluoroethylene whereby said surfaces have the benefit of both solid and fluid oil lubrication.

4,127,492

DISPERSING ADDITIVE FOR LUBRICATING OILS AND PROCESS FOR THE PREPARATION THEREOF

Franco Fossati, Robassomero; Andrea Peditto, Turin, and Vincenzo Petrillo, Cirie, all of Italy, assignors to Liquichimica Robassomero S.p.A., Milan, Italy

Continuation of Ser. No. 625,775, Oct. 24, 1975, abandoned. This application Aug. 1, 1977, Ser. No. 820,817

Claims priority, application Italy, Oct. 28, 1974, 28865 A/74

Int. Cl.[2] C10M *1/32*

U.S. Cl. 252—51.5 A 12 Claims

1. A process for preparing a dispersing additive for lubricating oils, which additive is a condensation product, wherein the process comprises:

(a) condensing maleic acid or the anhydride thereof with a mixture of olefins and a partially chlorinated polyolefin wherein said olefins of said mixture contain 10 to 15 carbon atoms and have a molecular weight of 112 to 280 and are selected from the group consisting of low polymers of propylene, low polymers of butylene and a fraction of n-olefins having 10 to 15 carbon atoms and wherein said partially chlorinated polyolefin is partially chlorinated polybutene or a partially chlorinated polypropylene, wherein each of said polybutene or polypropylene has a molecular weight of 800 to 1500 and wherein said mixture of olefins comprise 1 to 20% by weight of said mixture to produce a condensation product;

(b) adding (i) an acid composition selected from the group consisting of

(1) oleic acid,

(2) a mixture of carboxylic acids prepared from a fraction of n-olefins having 15–18 carbon atoms, and

(3) mixtures thereof to the condensation product of step (a) in an amount between 0.5 to 20% by weight of the condensation product,

and (ii) polyoxyethylene glycol; sorbitan oleic monoester having an alcoholic equivalent of 0.15; synthetic alcohol prepared from n-olefins having 12–15 carbon atoms; alcohols of a fraction of n-olefins having an average carbon atom number of 13; or a natural polyalcohol containing 2 to 6 hydroxyl groups which has a molecular weight of between 60 to 600 and is used in an amount corresponding to 1 to 5% of the carboxylic groups present

to effect partial esterification of the mixture to the degree that between 0.5 to 30% of the carboxylic functions of said acid mixture are esterified; and

(c) reacting products of partial esterification with polyamines having a nitrogen content of between 20 and 40%, whereby a final mixture of polyfunctional compounds is obtained, which polyfunctional compounds are selected from the group consisting of mixed amide, imide, amido-ester and ester.

5. A process according to claim 1, wherein the resulting mixture of polyfunctional compounds is diluted with a solvent oil, either naphtenic or paraffinic, having a viscosity of between 100 to 600 SSU at 37.8° C., whereby the final nitrogen content is in the range of 0.5 to 2%.

4,127,493

POLYESTER LUBRICANT ADDITIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

John S. Elliott, Beaconsfield, England; Bryan T. Davis, West Bloomfield, Mich., and Stephen Norman, St. Louis, Mo., assignors to Ethyl Corporation, Richmond, Va.

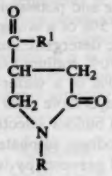
Division of Ser. No. 506,910, Sep. 17, 1974, Pat. No. 4,070,370. This application Nov. 23, 1977, Ser. No. 854,327

Claims priority, application United Kingdom, Sep. 18, 1973, 43735/73

Int. Cl.[2] C10M *1/32*

U.S. Cl. 252—51.5 A 13 Claims

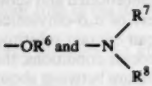
1. A lubricating composition comprising a major amount of lubricating oil and a minor amount sufficient to impart dispersant properties to said oil of a polyester additive which is the product of the reaction at elevated temperature from reflux up to about 210° C. with removal of water of a polyolefin substituted succinic acid or anhydride wherein said polyolefin substituent has a molecular weight of about 700–3,000 with a substituted carboxypyrrolidone of the following formula A



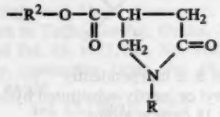
in which

(a) R is selected from the group consisting of a hydrogen atom, an alkyl containing up to 8 carbon atoms, a phenyl group, a benzyl group, a hydroxyalkyl group containing 1-3 hydroxy radicals, a polyoxyalkylenealkyl group containing up to an average of about 2 oxyalkylene groups, a hydroxyalkylaminoalkyl group, a carboxypyrrolidone substituted C_{2-6} alkyl group, and an imidazoline substituted C_{1-4} alkyl group,

(b) each R^1 is independently selected from a group consisting of



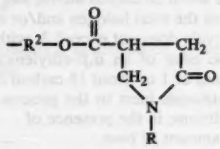
(c) R^6 is selected from the group consisting of alkyl groups containing up to 8 carbon atoms, polyoxyalkylene alkyl groups containing up to an average of about 2 oxyalkylene groups, hydroxyalkyl groups containing 1-3 hydroxy radicals, imidazoline substituted C_{1-4} alkyl groups, and groups having the formula



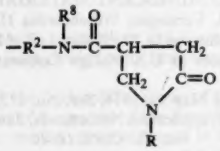
in which the groups R and R^2 independently are as herein defined,

(d) R^2 is alkylene containing 2-6 carbon atoms,

(e) R^7 is selected from the group consisting of alkyl groups containing up to 8 carbon atoms, hydroxyalkyl groups containing 1-3 hydroxy radicals, dialkylaminoalkyl groups, hydroxyalkylaminoalkyl groups, imidazoline substituted C_{1-4} alkyl groups, groups having the formula

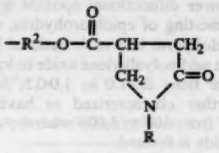


and groups having the formula



in which the groups R and R^2 independently are as herein defined,

(f) R^8 is selected from the group consisting of hydrogen, alkyl groups containing up to 8 carbon atoms, hydroxyalkyl groups containing up to 3 hydroxy groups, dialkyl aminoalkyl groups, imidazoline substituted C_{1-4} alkyl groups, hydroxyalkylaminoalkyl groups and groups having the formula



in which the groups R and R^2 independently are as herein defined and

(g) provided that there are a total of from 2-6 free hydroxy groups on groups R and or R^1.

10. A lubricating composition comprising a major amount of lubricating oil and a minor amount sufficient to impart dispersant properties of a polyester additive made by the process comprising reacting at elevated temperature of about 80°–180° C. a hydroxyamine compound selected from the group consisting of monohydroxyalkyl amines and di-hydroxyalkyl aminoalkyl amines with itaconic acid or alkyl esters thereof to form an intermediate carboxypyrrolidone compound and reacting said intermediate at elevated temperature from reflux up to about 210° C. with removal of water with a polyolefin substituted succinic acid or anhydride, said polyolefin substituent having a molecular weight of about 700–3,000.

4,127,494

POLYETHER POLYAMINES HAVING INVERSE WATER SOLUBILITY AS STREAM GENERATION AIDS

William H. Lindenberger, Darien, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 772,379, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 707,597, Jul. 22, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,583

Int. Cl.[2] C09K *5/04*; F22B *1/08*

U.S. Cl. 252—77 **8 Claims**

1. A method for increasing the efficiency of steam generation units operating at pressures of from 10–200 psi which comprises:

A. Adding to the water in the steam generation unit that is used to generate steam from 5–400 ppm of a polyether polyamine having been formed by the steps comprising:

1. Reacting a polyalkylene oxide, said alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide and mixtures thereof, with a lower difunctional epoxide selected from the group consisting of epichlorohydrin, epibromohydrin, and epiiodohydrin in a mole ratio of hydroxyl groups present on said polyalkylene oxide to lower difunctional epoxide of from 0.5:1 to 1:0.5, said polyalkylene oxide further characterized as having a molecular weight of from 100–1,000 whereby a capped polyalkylene oxide is formed;

2. Reacting the capped polyalkylene oxide of step 1 with a lower aliphatic amine having from 2–8 carbon atoms and two or more amino groups in a mole ratio of from 1:5 to 1:1 based on the number of amino groups present on the amine compound and the number of halogens on the capped polyalkylene oxide; and then,

3. Recovering the polyether polyamine.

B. Generating steam from the water contained in the steam generation unit; and then,

C. Recovering an increased amount of steam from said steam generation unit.

4. A method for increasing the efficiency of steam generation units operating at pressures of from 10–200 psi which comprises:

A. Adding to the water in the steam generation unit that is used to generate steam from 5–400 ppm of a polyether polyamine having been formed by the steps comprising:
1. Reacting a polyalkylene oxide, said alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide and mixtures thereof, with a lower difunctional epoxide selected from the group consisting of epichlorohydrin, epibromohydrin, and epiiodohydrin in a mole ratio of hydroxyl groups present on said polyalkylene oxide to lower difunctional epoxide of from 0.5:1.0 to 1.0:0.5, said polyalkylene oxide further characterized as having a molecular weight of from 100 to 1,000 whereby a capped polyalkylene oxide is formed;
2. Reacting the capped polyalkylene oxide of step 1 with a lower aliphatic amine having from 2–8 carbon atoms and two or more amino groups in a mole ratio of from 1:5 to 1:1 based on the number of amino groups present on the amine compound and the number of halogens on the capped polalkylene oxide;
3. Reacting the polyether polyamine of step 2 with a cross-linking agent, said cross-linking agent selected from the group consisting of ethylene dichloride, ethylene dibromide, 1,4-dichloro 2-butene, propylene dichloride, and epihalohydrins in a mole ratio of cross-linking agent to amine functionality added in step 2 above of from 0.1–1.6 whereby a cross-linked polyether polyamine is formed; and then,
4. Recovering the polyether polyamine.

B. Generating steam from the water contained in the steam generation unit; and then,

C. Recovering an increased amount of steam from said steam generation unit.

4,127,495
NON-BUILT LIQUID DETERGENTS

Robert C. Swinson, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 19, 1978, Ser. No. 870,799
Int. Cl.[2] C11D *1/831, 3/22*
U.S. Cl. 252—89 R **1 Claim**

1. A non-built liquid detergent composition comprising an aqueous solution of a surfactant mixture containing about 30 to 40% by weight of a nonionic surfactant, 10 to 15% by weight of an anionic surfactant and about 0.25 to 2% of a soil anti-redeposition agent selected from the class consisting of
(a) benzylhydroxyethyl cellulose having benzyl D.S. of about 0.1 to 0.3, a hydroxyethyl M.S. of about 1.5 to 3 and a viscosity in 5% aqueous solution of about 75 to 400 cps.; and
(b) phenylhydroxyethyl hydroxyethyl cellulose having phenylhydroxyethyl M.S. of about 0.1 to 0.3, hydroxyethyl M.S. of about 1.5 to 3 and a viscosity in 5% aqueous solution of about 75 to 400.

4,127,496
NON-PHOSPHATE AUTOMATIC DISHWASHER DETERGENT

Dallas F. Stokes, Metuchen, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 589,281, Jun. 23, 1975, abandoned, and Ser. No. 312,045, Dec. 4, 1972, abandoned. This application Feb. 10, 1977, Ser. No. 767,589
Int. Cl.[2] C11D *7/54*
U.S. Cl. 252—102 **7 Claims**

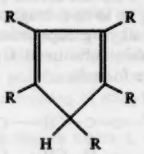
1. A water-soluble machine dishwashing detergent devoid of phosphate builder consisting essentially of:
(a) from about 10 to 30% of an organic sequestering agent selected from the group consisting of tetrasodium ethylene diamine tetracetate and nitrilotriacetic acid;
(b) from about 0.5 to 5% of a dry water-soluble anti-spotting bleaching agent selected from the group consisting of heterocyclic N-chlorimides, trichloromelamine, lithium hypochlorite, calcium hypochlorite, sodium perborate, potassium perborate and potassium monopersulfate;
(c) from about 0.5 to 5% of a water-soluble ethylene oxide condensed nonionic detergent; and
(d) from about 10 to 70% sodium carbonate or sequicarbonate, about 10 to 60% of a water-soluble sodium silicate having a SiO_2 to Na_2O mole ratio of from 1:1 to 3.2:1 and from 0 to 69% of a builder selected from the group consisting of borax, sodium sulphate, sodium chloride and mixtures thereof all percents by weight.

4,127,497
MICHAEL ADDUCTS OF (SUBSTITUTED) CYCLOPENTADIENE AND ESTERS: A PROCESS THEREFOR AND DERIVATIVES THEREOF

Robert L. Reierson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 657,775, Feb. 13, 1976, abandoned. This application May 9, 1977, Ser. No. 794,861
Int. Cl.[2] C07C *69/54;* C08L *67/06*
U.S. Cl. 252—182 **29 Claims**

1. A base-catalyzed Michael addition process for preparing Michael adducts of unsubstituted and substituted cyclopentadiene and aliphatic esters of α,β-ethylenically unsaturated carboxylic acids which can contain substituents inert to the process reagents at the process conditions, the process comprising contacting at a temperature between about −40° and about 35° C., inclusive:
(a) a 5-membered carbocycle of the formula:



wherein each R is independently
(i) hydrocarbyl or inertly-substituted hydrocarbyl of from 1 to about 18 carbon atoms;
(ii)

wherein R′ is (i) or OR″ and R″ is (i); or
(iii) cyano, halogen, or hydrogen with the proviso that the total carbon content, excluding the carbocycle, does not exceed about 20 carbon atoms, and with the further proviso that the total halogen and/or cyano content of the carbocycle does not exceed 3; with
(b) an aliphatic ester of an α,β-ethylenically unsaturated carboxylic acid of 1 to about 18 carbon atoms which can contain substituents inert to the process reagents at the process conditions; in the presence of
(c) a catalytic amount of base.

4,127,498
LUMINESCENT MATERIAL

Judicus M. P. J. Verstegen; Willebrordus H. M. M. van de Spijker, and Johannus G. Verlijsdonk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,283
Claims priority, application Netherlands, Jun. 1, 1973, 737628
Int. Cl.[2] C09K *11/46*
U.S. Cl. 252—301.4 F **4 Claims**

1. A luminescent beryllium-containing silicate, activated by bivalent europium and defined by the formula $Me_{1-x}Eu_x$-$Be_aSi_aO_{3a+1}$, in which $0.005 \leqq x \leqq 0.20$ and a has the value

1 or 2 and in which Me represents at least one alkaline earth metal selected from the group consisting of barium, strontium and calcium, in which, if $a = 2$, at least 50 gram. atomic % of Me is strontium and in which, if $a = 1$, up to 25 gram. atomic % of beryllium together with the same quantity of silicon may be replaced by an equiatomic quantity of aluminum.

4,127,499
SCINTILLATION COUNTING COMPOSITIONS

Tsang J. Chen; Raymond S. Miller, and Edmond S. Perry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 641,000, Dec. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 591,384, Jun. 30, 1975, abandoned. This application Oct. 7, 1976, Ser. No. 730,420

Int. Cl.[2] G01T *1/20;* G01J *1/58;* C09K *11/00*

U.S. Cl. 252—301.17 **25 Claims**

1. A scintillation counting composition comprising loaded polymeric particles derived from a latex, said particles

(1) being loaded with at least one hydrophobic fluor comprising at least about 16% of the dry weight of the composition, and

(2) having an average diameter no greater than about 0.2 micron.

6. The composition as defined in claim 1 wherein two different fluors are present, one of which is a primary fluor and the other of which is a wave shifter.

4,127,500
FIBROUS MATERIAL FOR EMULSION BREAKER AND METHOD FOR MANUFACTURING IT

Hideaki Suzuki, Machida; Tomoyoshi Ono, Hino; Wataru Yamamoto, Hachioji, and Naoki Yamamoto, Machida, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 19, 1977, Ser. No. 816,990

Claims priority, application Japan, Jul. 19, 1976, 51-84937; Jul. 19, 1976, 51-84938

Int. Cl.[2] B01D *17/04*

U.S. Cl. 252—358 **10 Claims**

1. An emulsion-treating fibrous material prepared by a chemical modification of insoluble fibrous material obtained by crosslinking with a sulfonyl group the fibrous material of aromatic monovinyl polymer; said fibrous material containing

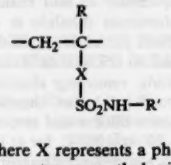
(a) 40 to 95 of the hydrophobic group of the formula [I'] which is part of the formula [I] per 100 of the aromatic nuclear structural units in the fibrous material;

Formula [I']:

$$-SO_2NH-R' \qquad [I']$$

where R' represents a hydrocarbon group having 2 to 20 carbon atoms;

Formula [I]:



where X represents a phenylene and R represents a hydrogen atom or methyl originating from aromatic monovinyl, and

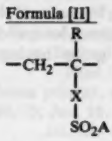
(b) 1 to 30 of the hydrophilic group of the formula [II'] which is part of the group of the formula [II] per 100 of the aromatic nuclear structural units in the fibrous material;

Formula [II']:

$$-SO_2A \qquad [II']$$

where A represents an atom or group selected from —Cl, —OH, $-NH_2$, $-NHNH_2$, $-NHCH_2CH_2OH$, $-N(CH_2CH_2OH)_2$, $-NHCH_3$ and $-N(CH_3)_2$;

Formula [II]



[II]

where R, X and A are as defined above.

4,127,501
POLYCHROMOPHORIC ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Richard H. S. Wang, and Joseph S. Zannucci, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 502,329, Sep. 3, 1974, abandoned. This application Aug. 9, 1976, Ser. No. 713,000

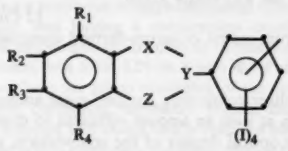
Int. Cl.[2] C09K *15/20;* C08K *5/35;* C07D *277/82, 249/18*

U.S. Cl. 252—403 **86 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one polychromophoric compound having the formula:

$$A-B-C-B-A$$

wherein A is a member of the group consisting of benzoxazoles, benzothiazoles, benzotriazoles, benzimidazoles, and indoles having the structure



wherein

X and Y are a carbon atom or a nitrogen atom;

Z is an oxygen atom, a sulfur atom, a nitrogen atom, or a nitrogen atom containing a hydrogen atom or an unsubstituted or substituted lower alkyl group having 1 to 12 carbon atoms or an aryl group or substituted aryl group having 6 to 18 carbon atoms;

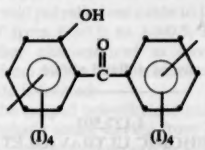
R_1, R_2, R_3 and R_4 are hydrogen, hydroxy, chloro, bromo, lower alkyl, cycloalkyl, phenyl, substituted phenyl, lower alkyl phenyl, alkoxy, amino, cyano, and carboxy;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the Y substituent and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, said B connecting group is attached to the benzenoid ring in the ortho, meta or para positions from the carbon atom connected to the Y substituent, said I substituents can all be one of the substituents listed above or different listed substituents;

wherein B is a linking group connecting A and C and can be alkylene, arylene, carbonyloxy, oxycarbonylalkyleneoxy, oxycarbonyl, alkyleneoxycarbonyloxy, oxyalkylenecarbonyloxy, oxycarbonyloxy, alkyleneoxy, oxyalkylene, alkyleneoxyalkyleneoxy, thio, thioalkyleneoxy, sulfinyldioxy, oxy(alkoxy)phosphinooxy, alkyloxyphosphinylidene, aryloxyphosphinylidene, oxy(alkyl)phosphinyloxy, aminocarbonyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, aminocarbonylamino, N-alkylaminocarbonylamino, N,N-dialkylaminocarbonyl, N-arylaminocarbonyl, N-

alkylaminocarbonyl, N,N-diarylaminocarbonyl, amino, N-alkylamino, N-arylamino, N-alkylaminoalkyleneoxy, N-arylaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy, alkyleneaminoalkylene, aryleneaminoarylene, aryleneaminoalkylene and alkyleneaminoarylene; and

wherein C is a hydroxybenzophenone group having the formula



I is the same substituent as listed above and is present in all positions of the benzenoid rings except the carbon atom attached to the B group connecting the A and C moieties, and the B connecting group is attached to the benzenoid ring in the ortho, meta or para position from the keto group of the benzophenone, and said I substituents can all be one of the substituents listed above or different listed substituents.

4,127,502

STABILIZERS FOR RECONSTITUTED, LYOPHILIZED SAMPLES

Charles M. Li Mutti, Hilton; Tai-Wing Wu, and Shirley Y. Lynn, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1977, Ser. No. 805,507
Int. Cl.[2] G01N *33/16*
U.S. Cl. 252—408 **12 Claims**

1. A stabilized serum matrix or serum-derived composition comprising

lipids,

and a clarity stabilizer comprising a sugar, sugar amine, or sugar alcohol in at least an amount sufficient to measurably reduce the optical density of the composition, after lyophilization and reconstitution with water, below the optical density of said lyophilized and reconstituted matrix or composition lacking said stabilizer, when measured at 700 nm. using a 1 cm. path length.

4,127,503

OXYGEN ABSORBENT

Yoshio Yoshikawa, Ushiku; Akira Amemiya; Toshio Komatsu, both of Tokyo; Yoshiaki Inoue, Iizuka, and Megumu Yuyama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc, Tokyo, Japan

Filed Jul. 15, 1977, Ser. No. 816,134
Claims priority, application Japan, Jul. 15, 1976, 51-84169
Int. Cl.[2] B01J *31/02, 27/14, 27/02, 27/06*
U.S. Cl. 252—429 R **54 Claims**

1. An oxygen absorbent in which at least one metal halide is coated on the surface of at least one metal powder, the amount of metal halide coated being in the range of from about 0.001 to about 10 parts by weight per 100 parts by weight of the metal powder, the water content of the absorbent being less than 1% by weight based on the basis of total weight of the absorbent.

10. An oxygen absorbent in which at least one metal halide and at least one binder and/or at least one alkaline material are coated on the surface of at least one metal powder, the amount of the metal halide coated being in the range of from about 0.001 to about 10 parts by weight per 100 parts by weight of the metal powder, the water content of the absorbent being less than 1% by weight on the basis of total weight of the absorbent.

4,127,504

PROCESS FOR THE PRODUCTION OF A CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF ALPHAOLEFINS

Hiroshi Ueno; Naomi Inaba, both of Ooi; Tokuo Makishima, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1976, Ser. No. 744,942
Claims priority, application Japan, Dec. 8, 1975, 50-145165; Nov. 25, 1975, 50-140191
The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **19 Claims**

1. A process for the production of a catalyst component for use in the polymerization of α-olefins which comprises reducing titanium tetrachloride at a temperature of from −50° to +30° C. with an organoaluminum compound or mixture of such compounds having the general formula AlR_nX_{3-n} wherein R represents a hydrocarbon group having 1 to 18 carbon atoms, X represents a halogen atom and n represents a number expressed as $0<n\leqq 3$, to obtain a brown or black-brown titanium trichloride reduced solid containing aluminum compounds, removing aluminum compounds contained in said reduced solid, and thereafter contacting said reduced solid in an inert diluent and at a temperature within the range of from −30° to 100° C. for at least 30 minutes with an activator which is a complex or mixture of titanium tetrachloride and a dialkyl ether wherein the mole ratio of dialkyl ether to titanium tetrachloride is at least 0.1 and the concentration of titanium tetrachloride is maintained at at least 1 volume percent of the liquid phase, said dialkyl ether having the formula R'OR", in which R' and R" are the same or different and each are selected from the group consisting of (a) alkyl groups having 1 to 4 carbon atoms, (b) normal alkyl groups having 5 carbon atoms, and (c) alkyl groups having 6–20 carbon atoms.

4,127,505

PROCESS FOR THE PRODUCTION OF A CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS

Hiroshi Ueno; Naomi Inaba, both of Ooi; Tokyo Makishima, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1976, Ser. No. 744,236
Claims priority, application Japan, Nov. 25, 1975, 50-140191
The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **19 Claims**

1. A process for the production of a catalyst component for use in the polymerization of α-olefins which comprises reducing titanium tetrachloride at a temperature of from −50° to +30° C. with a dialkylaluminum monohalide and monoalkylaluminum dihalide, said dialkylaluminum monohalide being employed in an amount at least equimolar to said titanium tetrachloride and said monoalkylaluminum dihalide is employed in an amount of 0.3 to 1.2 mols per mole of titanium tetrachloride, to obtain a violet titanium trichloride reduced solid containing aluminum compounds, removing aluminum compounds contained in said reduced solid, and thereafter contacting said reduced solid in an inert diluent and at a temperature within the range of from −30° to 100° C. for at least 30 minutes with an activator which is a complex or mixture of titanium tetrachloride and a dialkyl ether wherein the mole ratio of dialkyl ether to titanium tetrachloride is at least 0.1 and the concentration of titanium tetrachloride is maintained at at least 1 volume percent of the liquid phase, said dialkyl ether having the formula R'OR", in which R' and R" are the same or different and each are selected from the group consisting of (a) alkyl groups having 1 to 4 carbon atoms, (b) normal alkyl groups having 5 carbon atoms, and (c) alkyl groups having 6–20 carbon atoms.

4,127,506

PHOTOCHEMICAL PREPARATION OF OLEFIN ADDITION CATALYSTS

Harry B. Gray, Pasadena; Alan Rembaum, Altadena, and Amitava Gupta, Los Angeles, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 666,184, Mar. 12, 1976, abandoned. This application Jan. 31, 1977, Ser. No. 764,402

Int. Cl.[2] B01J *31/20, 31/24*

U.S. Cl. 252—431 N 19 Claims

1. A method of preparing a novel photoactivated catalyst comprising the steps of:

irradiating a mixture of low valent transition metal coordination compound selected from a carbonyl or phosphine of a metal selected from cobalt, nickel, iron, platinum, rhodium, palladium, manganese, chromium, titanium, tantalum, ruthenium or iridium and a solid polymer polyvinylpyridine support having tertiary amine ligands capable of coordinating with said metal with ultraviolet radiation having a wavelength within the range of 250 to 350 nm; and

attaching at least 0.1% by weight of said transition metal atoms to said ligands during said irradiation to form a photoactivated catalyst.

4,127,507

HYDROCARBON SOLUBLE STRAIGHT-CHAIN DI-(LOWER ALKYL) MAGNESIUM COMPOSITIONS

Loyd W. Fannin, Dickinson, and Dennis B. Malpass, LaPorte, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Jun. 29, 1977, Ser. No. 811,339

Int. Cl.[2] B01J *31/12;* C08F *4/50*

U.S. Cl. 252—431 R 19 Claims

1. A hydrocarbon-soluble compositon of matter comprising di-n-butylmagnesium and diethylmagnesium at a n-butyl:ethyl alkyl group ratio of from about 0.25:1 to about 4:1.

4,127,508

SILVER-CADMIUM ALLOY CATALYST

Thomas H. Vanderspurt, Gillette, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 714,201, Aug. 13, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 846,064

Int. Cl.[2] B01J *21/04, 21/08, 23/06, 23/50*

U.S. Cl. 252—457 9 Claims

1. A catalyst composition consisting essentially of a silver-cadmium alloy on a carrier substrate, wherein the atomic ratio of silver to cadmium in the alloy is in the range of between about 0.1 and 4 to 1 and the silver-cadmium alloy exhibits an X-ray diffraction pattern which is substantially free of detectable unalloyed metal crystallite lines.

4,127,509

NOVEL CATALYST FOR CONVERSION OF SULFUROUS ANHYDRIDE TO SULFURIC ANHYDRIDE AND VICE VERSA

Phillippe Leclercq, Lille, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 27, 1977, Ser. No. 763,224

Int. Cl.[2] B01J *29/10, 23/58;* C01B *17/68*

U.S. Cl. 252—459 6 Claims

1. A catalyst for the interconversion of sulfurous anhydride and sulfuric anhydride, which catalyst consists essentially of iron, copper, and at least one alkali metal which is sodium or potassium and which is present in an atomic amount greater than the atomic amount of iron, the atomic ratio of copper to iron being from about 0.1 to 0.55 and the atomic ratio of alkali metal to iron being from about 1.3 to 3.2.

4. A catalyst according to claim 1 having a siliceous support.

4,127,510

CATALYST FOR THE PURIFICATION OF AN EXHAUST GAS

Brian Harrison, Watlington, and Alan F. Diwell, Reading, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Oct. 26, 1976, Ser. No. 735,884

Claims priority, application United Kingdom, Oct. 31, 1975, 45493/75; Jun. 18, 1976, 25370/76

Int. Cl.[2] B01J *21/04, 23/10, 23/58, 23/74*

U.S. Cl. 252—462 3 Claims

1. A catalyst for the purification of an exhaust gas which includes the simultaneous reduction of a nitrogen oxide and the oxidation of carbon monoxide and unreacted hydrocarbon, said catalyst comprising an inert refractory ceramic honeycomb support, an intermediate refractory metal oxide layer on the support to provide a high surface area and a catalytic material deposited on said intermediate refractory metal oxide layer, said material comprising a compound selected from the group consisting of $LaRhO_3$, $MgRh_2O_4$, Ba_4PtO_6, $CoAlRhO_4$, $CaPd_3O_4$ and $LaNa_{0.5}Ir_{0.5}O_3$.

4,127,511

CERAMIC ELECTRICAL RESISTOR WITH NONLINEAR VOLTAGE CHARACTERISTIC

Hans P. Klein, and Anton Menth, both of Nussbaumen, Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 30, 1977, Ser. No. 811,986

Claims priority, application Switzerland, Jul. 1, 1976, 8424/76

Int. Cl.[2] H01B *1/08*

U.S. Cl. 252—518 7 Claims

1. A method of producing a ceramic electrical resistor, having a nonlinear voltage-dependent current-voltage characteristic, and having a composition consisting essentially of 50–99 mol% zinc oxide, 0.05 to 10 mol% of at least one oxide of boron, and from 0.01 to 5 mol % of at least one oxide selected from the group consisting of the oxides of cobalt, manganese, chromium, antimony, silicon, and mixtures thereof, and wherein said composition contains essentially no bismuth oxide; which comprises the steps: mixing the starting materials in powder form and with grain size of from 0.1 to 1μ; drying; sifting; calcining at around 450° C. for from 1 to 3 hours; pressing; and sintering the resulting briquette in air at from 1100° to 1350° C. for about 1 hour.

4,127,512

LOW-FOAMING WASHING AGENT COMPOSITIONS AND FOAM INHIBITOR COMPOSITIONS

Rudi Heyden, Hochdahl-Millrath; Michael Eckelt, Dusseldorf; Adolf Asbeck, Dusseldorf-Holthausen; Jurgen Hoffmeister, Dusseldorf, and Edmund Schmadel, Leichlingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 3, 1976, Ser. No. 711,204

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1975, 2535518

Int. Cl.[2] C11D *1/02, 1/66, 1/83*

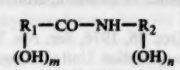
U.S. Cl. 252—544 18 Claims

9. A low-foaming washing agent composition consisting essentially of (1) from 95% to 99.8% by weight of a mixture of at least one surface-active compound selected from the group consisting of anionic surface-active compounds, zwitterionic surface-active compounds and nonionic surface-active compounds, and at least one builder salt, and (2) from 0.2% to 5% by weight of a foam inhibiting mixture consisting essentially of

(A) at least one monoester of one mol of an alkanediol having 16 to 20 carbon atoms selected from the group consisting of 1,9-dihydroxyhexadecane, 1,11-dihydroxyhexadecane, 1,9-dihydroxyoctadecane, 1,10-dihydroxyoctadecane, 1,12-dihydroxyoctadecane, 1,9-dihydroxyeicosane

and mixtures thereof with one mol of a saturated fatty acid having 18 to 26 carbon atoms, and

(B) at least one carboxylic acid amide having a melting range above 70° C. and the formula



wherein R_1 and R_2 are alkyls having 10 to 26 carbon atoms, m and n are integers from 0 to 2, and the sum of $m + n$ is an integer from 1 to 4, the weight ratio of component A to component B being from 5:1 to 1:5.

4,127,513
METHOD FOR PREPARING POLYETHER GLYCOLS

Harold E. Bellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1977, Ser. No. 850,029
Int. Cl.² C08G *65/10, 65/20*
U.S. Cl. 528—413 5 Claims

1. In a process for preparing a polyether glycol by the copolymerization of tetrahydrofuran and an alkylene oxide of 2 to 6 carbon atoms, in which an acid-activated montmorillonite clay is used as a catalyst, the improvement of using a clay which contains, per gram, 0.1 to 0.9 milliequivalent of hydrogen ions having pK_a values of -3 to -8.

4,127,514
PROCESS FOR ACCELERATED CURE OF EPOXY RESINS

Harold G. Waddill, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Nov. 23, 1977, Ser. No. 854,173
Int. Cl.² C08G *59/56*
U.S. Cl. 528—93 20 Claims

1. A process for accelerating the cure of an epoxy resin cured with a polyoxyalkylenepolyamine which comprises:

incorporating therein an accelerator combination of salicylic acid and iminobis(propylamine).

4,127,515
WAXING SPONGE

David M. MacRae, South Plainfield, and Karl H. Roberts, Flemington, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 516,292, Oct. 21, 1974, abandoned. This application Nov. 1, 1976, Ser. No. 737,872
Int. Cl.² C08G *18/14;* C09G *1/10;* C08K *5/10;* C08L *75/06*
U.S. Cl. 521—112 15 Claims

1. A hydrophilic flexible open-celled poly (urea/urethane) sponge containing uniformly distributed therethrough a readily releasable wax composition, said sponge being produced by mixing and reacting (a) an isocyanate capped prepolymer obtained by reaction of a polyoxyethylene polyol with a stoichiometric excess of an organic polyisocyanate with (b) an aqueous dispersion containing by weight of the prepolymer about 30 to 200% of water as substantially the sole diluent and, by weight of the dispersion, about 0.1 to 8% of a wax and about 2 to 12% of a nonionic polyoxyethylenated polyhydric alcohol surface active agent.

4,127,516
HYDROPHILIC POLYURETHANE FOAMS WITH GOOD WET STRENGTH

Donald W. Larsen, Marriottsville, and Louis L. Wood, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 28, 1977, Ser. No. 772,942
Int. Cl.² C08G *18/14, 18/54*
U.S. Cl. 521—137 16 Claims

9. A hydrophilic foam comprising the reaction product of:

(A) a urethane prepolymer formed by capping a hydrophilic oxyalkylene polyol with an isocyanate; and

(B) an aqueous dispersion containing from about 0.1 to about 5 parts of weight based on the weight of the prepolymer of an essentially linear polyurea reacted with a crosslinking agent.

4,127,517
NOVEL DOCOSAPEPTIDES, INTERMEDIATES THEREFORE AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID DOCOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,118
Int. Cl.² C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel docosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino,diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,518
NOVEL DERIVATIVES OF GAMMA-ENDORPHINS, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID DERIVATIVES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,120
Int. Cl.² C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. A heptadecapeptide represented by the formula

H-Tyr-X-Gly-phe-Met-Thr-Ser-Glu-Lys-Ser-Gin-Thr-pro-Leu-Val-Thr-Leu-y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histadine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,519

OCTADECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID OCTADECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 65115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,121
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The octadecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,520

NOVEL NONADECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID NONADECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,122
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The nonadecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Y

wherein X is a chiral residue of D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, lower alkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,521

NOVEL OCTACOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID OCTACOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,126
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The octacosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Lys-Y

wherein X is a chiral residue of D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,522

NOVEL TRIACONTAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID TRIACONTAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,128
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel triacontapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Lys-Lys-Gly-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,523

NOVEL UNDECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID UNDECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,135
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The undecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-histidine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically salts thereof.

4,127,524

NOVEL DODECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID DODECAPEPTIDES

David H. Coy, 4319 Perrier St, New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,136
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The dodecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-theronine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selectd from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,525

NOVEL TRIDECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID TRIDECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,137
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The tridecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,526

NOVEL TETRADECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID TETRADECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 65115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,138
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Nove tetradecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosin, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino, and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,527

NOVEL PENTADECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID PENTADECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,139
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel pentadecapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, aminoloweralkyl, aminodiloweralkyl and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,528

NOVEL DERIVATIVES OF ALPHA-ENDORPHIN, INTERMEDIATES THEREFOR AND COMPOSITIONS AND METHODS EMPLOYING SAID DERIVATIVES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,140
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. A hexadecapeptide represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tryosine, D-tryptophan, D-Serine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, D-proline, D-histidine and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and loweralkoxy; and the pharmaceutically acceptable salts thereof.

4,127,529

NOVEL EICOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID EICOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,203
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The eicosapeptides represented by the formula

H-Tyr-X-Gly-Pbhe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Y

wherein X is a chiral residue of a D-amino acid selected from the grou consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,530

NOVEL HENEICOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID HENEICOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,204
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The heneicoscapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, lower alkylamino, diloweralkyl amino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,531

NOVEL HEXAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID HEXAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,205
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel hexapeptides of the formula:

H-Tyr-X-Gly-Phe-Met-Thr-Y

wherein: X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-proline D-aspartic acid, D-asparagine, D-lysine, D-arginine and D-histidine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof; intermediates useful in making the novel compounds; and pharmaceutical compositions and methods employing the novel compounds.

4,127,532

NOVEL HEPTAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID HEPTAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,206
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The heptapeptides represented by the formula:

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-hista dine, D-asparagine, D-lysine, or D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino or lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,533

NOVEL OCTAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID OCTAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,207
Int. Cl.[2] C08L *37/00*; C07C *103/52*; H61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel octapeptides represented by the formula:

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; and Y is selected from the group consisting of hydroxy, amino, aminoloweralkyl, aminodiloweralkyl or lower alkoxy, or a pharmaceutically acceptable salt thereof.

4,127,534

NOVEL TRIPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID TRIPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 65115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,208
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel tripeptides represented by the formula

H-Tyr-X-Gly-X

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,535

NOVEL DIPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID DIPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,210
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel dipeptides represented by the formula

H-Tyr-X-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-histidine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, aminoloweralkyl, aminodiloweralkyl and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,536

NOVEL TRICOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID TRICOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,211
Int. Cl.[2] C08L *37/00*; C07C *103/52*; A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel tricosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tryosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,537

NOVEL TETRACOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID TETRACOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,212
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel tetracosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine and D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,538

NOVEL PENTACOSAPEPTIDES, INTERMEDIATES THEREFOR AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID PENTACOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,213
Int. Cl.[2] C08L *37/00;* C07C *103/52;* H61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel pentacosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting 9f D-alanine, D-leucine, D-isolecine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and pharmaceutically acceptable salts thereof.

4,127,539

NOVEL HEXACOSAPEPTIDES, INTERMEDIATES THEREFORE AND PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING SAID HEXACOSAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,214
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel hexacosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Y

wherein X is a chiral residual of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-aparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, aminoloweralkyl, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,540

NOVEL DERIVATIVES OF δ-ENDORPHINS, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID DERIVATIVES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., New Orleans, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,215
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. Novel heptacosapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Gln-Thr-Pro-Leu-Val-Thr-Leu-Phe-Lys-Asn-Ala-Ile-Ile-Lys-Asn-Ala-Tyr-Y

wherein X is a chiral residue of a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-histidine, D-proline, D-threonine, D-methionine, D-glutamic acid, G-glutamine, D-aspartic acid, D-asparagine, D-lysine, and D-arginine; Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino and lower alkoxy; and the pharmaceutically acceptable salts thereof.

4,127,541

NOVEL DECAPEPTIDES, INTERMEDIATES THEREFOR, AND COMPOSITIONS AND METHODS EMPLOYING SAID DECAPEPTIDES

David H. Coy, 4319 Perrier St., New Orleans, La. 70115, and Abba J. Kastin, 4400 Morales St., Metairie, La. 70002

Filed Jun. 16, 1977, Ser. No. 807,230
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 20 Claims

1. The decapeptides represented by the formula

H-Tyr-X-Gly-Phe-Met-Thr-Ser-Glu-Lys-Ser-Y

wherein X is a D-amino acid selected from the group consisting of D-alanine, D-leucine, D-isoleucine, D-valine, D-histadine, D-phenylalanine, D-tyrosine, D-tryptophan, D-serine, D-threonine, D-methionine, D-glutamic acid, D-glutamine, D-aspartic acid, D-asparagine, D-lysine, or D-arginine; and Y is selected from the group consisting of hydroxy, amino, loweralkylamino, diloweralkylamino or lower alkoxy, or a pharmaceutically acceptable salt thereof.

4,127,542

STABILIZATION OF POLYESTER URETHANES USING ORGANIC EPOXIDES

Samuel Kaizerman, Bridgewater, and Ajaib Singh, Hillsborough Township, Somerset County, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 640,595, Dec. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 567,570, Apr. 14, 1975, abandoned, which is a continuation of Ser. No. 457,887, Apr. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 302,369, Oct. 30, 1972, abandoned. This application Feb. 23, 1977, Ser. No. 771,285
Int. Cl.[2] C08K *5/06;* C08G *18/10*
U.S. Cl. 260—18 PF 19 Claims

1. A stable solid elastomeric urethane composition selected from the group consisting of

(A) the reaction product of

(1) a hydroxyl-terminated polyester,

(2) an aliphatic diol,

(3) optionally, a mixture of an aliphatic diol and a minor amount of an aliphatic polyol having a functionality greater than 2,

(4) an aromatic diisocyanate in an amount essentially stoichiometrically equivalent to the amount of available hydroxy groups of said (1), (2) and (3), and
(5) optionally, a catalyst, and
(B) the reaction product of
(a) an isocyanate-terminated prepolymer composition prepared by reacting a hydroxyl-terminated polyester with an aromatic diisocyanate in excess of the amount of available hydroxyl groups in said polyester and
(b) a compound comprising
(I) an aromatic diamine in an amount of from about 75 to about 130% of the amount stoichiometrically required to react with the available isocyanate groups of said (a) or
(II) an aliphatic diol, or a mixture of an aliphatic diol and a minor amount of an aliphatic polyol having a functionality greater than 2, in an amount of from about 80 to about 110% of the amount required to react with the available isocyanate groups of said (a)
said (A) and (B) containing from about 0.05 to about 0.75%, by weight, based on the weight of (A) or (a), of an organic epoxide compound having a molecular weight greater than 60 and no other functional groups reactive with the urethane components.

4,127,543

AQUEOUS COATING COMPOSITION FREE FROM PHENOLIC RESIN

Hans-Peter Patzchke, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts, Wuppertal, Fed. Rep. of Germany

Filed Aug. 18, 1977, Ser. No. 825,722
Claims priority, application Australia, Aug. 8, 1976, 126224/76
Int. Cl.² C09D *3/74, 5/02, 5/40*
U.S. Cl. 260—23 R **18 Claims**

1. An aqueous coating composition free from phenolic resin, particularly for electro-dip-lacquering, containing a binder dilutable with water by neutralization with a base, wherein it contains in combination as binder component
(A) 100 parts by weight of substantially anhydride-free reaction products containing carboxyl groups and, in addition, ester and/or amide and/or imide groups and having a molecular weight of from about 800 to about 5000, of
(a) substantially carboxyl-group-free olefin polymer oils and/or natural unsaturated oils, the latter or their mixtures with the substantially carboxyl-group-free olefin polymer oils having a hydrogenation iodine number of more than about 150 and a content of saturated and/or mono-unsaturated fatty acids of less than about 25% by weight, with
(b) α,β-unsaturated dicarboxylic acids or their anhydrides, particularly maleic acid anhydride, and converting the acid anhydride groups present, if any, into carboxyl groups and/or by introducing ester, amide and-/or imide groups into the reaction products,
the reaction products containing per gram of resin from about 2.0 to about 3.5 milliequivalents of carboxyl groups and up to about 2.4 milliequivalents, of ester, amide and/or imide groups at least about 50 milliequivalents of 100milliequivalents of the sum of milliequivalents of carboxyl groups, ester groups, amide groups and/or imide groups being carboxyl groups, and
(B) 5 to 80 parts by weight of substantially carboxyl-group-free, saturated long-chain polymers having a molecular weight of from about 400 to about 10,000 and containing from about 1 to about 12 milliequivalents of aliphatic alcohol groups, the ratio of the carboxyl groups in the compounds of component (A) to the aliphatic alcohol groups in the compounds of component (B) amounting to from about 0.9 to about 15:1.

4,127,544

PROCESS FOR THE PARTIAL SUBSTITUTION OF AMMONIUM LIGNOSULFONATE FOR PHENOL IN PHENOLIC-ALDEHYDE RESIN ADHESIVES

George G. Allan, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Sep. 11, 1975, Ser. No. 612,388
Int. Cl.² C08L *97/00;* **C08G** *8/18;* **C09J** *3/28*
U.S. Cl. 260—17.5 **4 Claims**

1. A process for making a phenol-formaldehyde adhesive in which ammonium lignosulfonate is substituted for a portion of the phenol ingredient, which consists essentially of the steps of:
dissolving a dry residue of ammonia base waste sulfite liquor containing ammonium lignosulfonate in phenol in weight ratios of residue to solvent of 2:1 to 1:10 to form a lignosulfonate reaction solution;
heating said reaction solution under autogenous pressure at elevated temperature until a reaction mass forms, the lignosulfonate containing portion of which is substantially water insoluble but is soluble in a dilute aqueous solution of an alkali metal hydroxide; and
condensing said reaction mass with a portion of formaldehyde in the presence of an aqueous alkali metal hydroxide until a thermosettable resin is formed.

4,127,545

HOT MELT CROSSLINKED BUTYL SEALANT

John E. Callan, Broken Arrow, Okla., and Eric L. Scheinbart, Copley, Ohio, assignors to Cities Service Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 689,022, May 24, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,446
Int. Cl.² C08L *93/00*
U.S. Cl. 260—27 BB **3 Claims**

1. A hot melt sealant composition having a yield strength of about 60–350 psi at room temperature and comprising (a) a slightly crosslinked butyl rubber compound having a Mooney viscosity (ML 1+3 at 260° F.) of 55±5, (b) about 25–200 phr of a crystalline polymeric resin selected from the group consisting of ethylene-ethyl acrylate copolymers and ethylene-vinyl acetate copolymers, and (c) about 25–200 phr of a tackifying resin selected from the group consisting of hydrocarbon resins, phenolic resins, coumarone-indene resins, and natural and modified rosins.

4,127,546

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERS WITH ROSIN SALTS

Robert D. Lundberg, Bridgewater; Robert R. Phillips, Spring Lake Heights; Henry S. Makowski, Scotch Plains, and Douglas Brenner, Livingston, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Nov. 29, 1977, Ser. No. 855,755
Int. Cl.² C08L *93/00*
U.S. Cl. 260—27 BB **23 Claims**

1. An elastomeric composition including
(a) a neutralized sulfonated polymer having at least about 15 meq metal sulfonate groups per 100 grams of said sulfonated polymer; and
(b) at least about 1 part by weight of a preferential plasticizer based on 100 parts of said neutralized sulfonated polymer, said preferential plasticizer being a metal rosin salt.

4,127,547

HYDROGEL DOUGH COMPOSITION FOR FABRICATION OF FOAMED ARTICLES

Walter H. Smarook, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 536,955
Int. Cl.² C08J *9/28;* **C08K** *3/20, 5/02;* **C08L** *81/06*
U.S. Cl. 521—98 **8 Claims**

1. A composition suitable for fabricating low density foamed

articles consisting essentially of a non-tacky hydrogel dough obtained by mixing:

(a) at least one normally solid thermoplastic polyarylene polyether polysulfone resin with about 25 to about 80 parts per hundred parts by weight of said resin of a normally liquid organic solvent having of solubility parameter, δ, within about (1.3 calories/cc.)$^{\frac{1}{2}}$ of that of said resin or a mixture of normally liquid organic solvents having an average solubility parameter, δ, within about (1.3 calories/cc.)$^{\frac{1}{2}}$ of that of said resin; and

(b) at least one part by weight of water per 100 parts by weight of said resin completely until a white, homogeneous mixture of polyarylene polyether polysulfone resin, solvent, and water is obtained.

4,127,548

CEMENT COMPOSITIONS

John H. Alexander, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 123,419, Mar. 11, 1971, abandoned. This application Jul. 13, 1976, Ser. No. 704,945

Claims priority, application United Kingdom, Mar. 18, 1970, 13040/70

Int. Cl.^{2} C08K *3/22*

U.S. Cl. 260—29.2 TN **5 Claims**

1. A cement composition comprising:

(a) 100 parts by weight of a hydraulic cement;

(b) 10 to 10,000 parts by weight of a low density filler selected from the group consisting of urea/formaldehyde polymers, polyamide and polyester and wood cellulose;

(c) 10 to 75 parts by weight of water; and

(d) up to 5,000 parts by weight of an organic polyisocyanate and isocyanate-reactive organic compound taken together, the polyisocyanate being used in excess with respect to the isocyanate reactive compound for reaction with the water and the total amount of polyisocyanate and isocyanate-reactive organic compound being greater than the amount of water present.

4,127,549

METHOD FOR IMPROVING THE SCRUB-RESISTANT PROPERTIES OF WATER-BASED LATEX PAINT COMPOSITIONS

Charles M. Churchill; George A. Allen, both of Spartanburg, and John F. Stadalsky, Campobello, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 738,636, Nov. 3, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,354

Int. Cl.^{2} C09D *3/74, 3/80, 5/02*

U.S. Cl. 260—29.6 E **5 Claims**

1. A method for improving the scrub-resistant properties of a water-based latex paint composition which consists essentially of incorporating into said latex paint composition a minor effective amount of an alkoxylate of an alkylation reaction product formed by the acid catalyzed alkylation of a phenolic compound with an alkylation agent selected from the group consisting of benzl halide and a substituted benzyl halide, said alkoxylate being further characterized as containing from about 6 to about 30 alkoxy units per molecule.

4,127,550

METHOD FOR IMPROVING THE SCRUB-RESISTANT PROPERTIES OF WATER-BASED LATEX PAINT COMPOSITIONS

Charles M. Churchill; George A. Allen, both of Spartanburg, and John F. Stadalsky, Campobello, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 738,637, Nov. 3, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,355

Int. Cl.^{2} C09D *3/74, 5/02*

U.S. Cl. 260—29.6 E **6 Claims**

1. A method for improving the scrub-resistant properties of a water-based latex paint composition which consists essentially of incorporating into said latex paint composition a minor effective amount of an alkoxylate of an alkylation reaction product formed by the acid catalyzed alkylation of a phenolic compound with an alkylation agent selected from the group consisting of styrene and a substituted styrene, said alkoxyate being further characterized as containing from about 6 to about 30 alkoxy units per molecule.

4,127,551

MIXED ESTERS OF DIBASIC UNSATURATED ACIDS, GLYCOLS AND GLYCIDYL ESTERS

James C. Fang, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

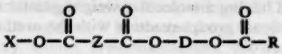
Division of Ser. No. 338,053, Mar. 5, 1973, Pat. No. 3,928,424. This application Sep. 25, 1975, Ser. No. 616,836

Int. Cl.^{2} C08K *5/11*; C08L *61/22, 61/24, 61/28*

U.S. Cl. 260—31.6 **8 Claims**

1. A coating composition comprising, in percent by weight of the total:

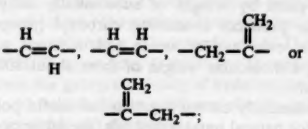
(a) 50–80% of a compound represented by the structure



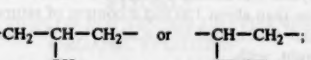
where

X is the residue of
ethylene glycol,
1,2-propanediol,
1,3-propanediol,
1,4-butanediol,
1,5-pentanediol,
glycerol,
1,2,3-butanetriol,
1,2,3,4-butanetetrol,
1,6-hexanediol,
neopentyl glycol,
diethylene glycol,
trimethylol propane or
trimethylpentanediol;

Z is



D is



and

R is an alkyl radical of 4–18 carbon atoms, or singly, doubly or triply unsaturated hydrocarbon radical of 17 carbon atoms, and

(b) 20–50% of an aminoplast resin.

4,127,552

ANTISTATIC FOOTWEAR

William T. Bidston, and Paul A. Blackie, both of Liverpool, England, assignors to Dunlop Limited, London, England

Filed Oct. 22, 1976, Ser. No. 734,864

Claims priority, application United Kingdom, Oct. 29, 1975, 44540/75

Int. Cl.^{2} C08K *5/12*

U.S. Cl. 260—31.8 R **17 Claims**

1. Antistatic footwear at least the outsole of which is formed

from a composition comprising a vinyl chloride polymer, a non-ionic antistatic agent, an ionic antistatic agent and a stabilizer for the vinyl chloride polymer,

said ionic antistatic agent being present in an amount of from 2 to 8 parts by weight per hundred parts of said vinyl chloride polymer,

said stabilizer consisting essentially of a nonmetallic stablizer being present in an amount of from 3 to 10 parts by weight per hundred parts of said vinyl chloride polymer,

said vinyl chloride polymer being blended with a minor proportion of a material selected from the group consisting of nitrile rubber and polyvinyl acetate,

and said outside having a Shore A hardness in the range 40 to 65 and an electrical resistance of from 5×10^4 to 5×10^7 ohms.

4,127,553
ELECTRICAL INSULATING RESIN COMPOSITION COMPRISING A POLYESTER RESIN OR ESTER-IMIDE RESIN

Yuichi Osada; Yasunori Okada; Shozo Kasai; Mineo Nakano; Shigeo Tachiki; Nobuyuki Hayashi, and Masahiro Abo, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,769

Claims priority, application Japan, Apr. 20, 1976, 51-46056; Mar. 29, 1977, 52-36803; Mar. 31, 1977, 52-37278

Int. Cl.[2] C08K *5/06;* **C08G** *63/68*

U.S. Cl. 260—33.2 R **46 Claims**

1. An electrical insulating resin composition comprising a resin obtained by reacting

(a) at least one of one or more tri- or higher polydric alcohols and tri- or higher polybasic acids,

(b) one or more dihydric alcohols, and

(c) one or more dibasic acids, and at least one of

(d) one or more monobasic acids containing one or more aromatic rings in the molecule and

(e) one or more monohydric alcohols containing one or more aromatic rings in the molecule.

4,127,554
METHOD OF MANUFACTURE, BY MEANS OF THERMOPLASTIC MOULDING, OF ELEMENTS MADE OF CRYSTALLIZABLE PLASTIC MATERIAL WITH A STRENGTHENING LOAD

Robert Soder, Montreux-Territet, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Jul. 19, 1976, Ser. No. 706,393

Claims priority, application Switzerland, Aug. 11, 1975, 10421/75

Int. Cl.[2] C08L *77/00, 71/02*

U.S. Cl. 260—37 N **4 Claims**

1. A method for manufacturing molded thermoplastic products formed of crystallizable plastic material having reinforcing elements, said method comprising, introducing reinforcement elements to the molten thermoplastic material before crystallization begins, permitting crystallization to occur so that when the individual crystallites of the thermoplastic material have reached their maximum size, the reinforcing elements are arranged in the zone of contact of the crystallites exclusively exterior of the crystallites, said reinforcing elements being capable of being moved by the front of the crystallization during the growth of the crystal and said reinforcing elements

a. having dimensions smaller than the dimensions of the crystallites of the thermoplastic material,

b. are present in an amount of from 0.05 to 5% by weight based on the thermoplastic material and

c. having a shape favorable to the transfer of mechanical stresses,

said reinforcing elements formed of organo-metallic material one of fibrous, needle-shaped, small bladed, prismatic, spherical and bristle particle configuration at least partially soluble in the molten thermoplastic material and an additive is introduced to the reinforcing material which is capable of solublizing same at the molding temperature.

4,127,555
PIGMENTATION OF PLASTICS MOULDING MATERIAL

Brian J. Kendall-Smith, Weoley Hill; Fredrick J. Parker, Wylde Green, and Norman B. Nicklin, Halesowen, all of England, assignors to British Industrial Plastics Limited, Manchester, United Kingdom

Filed Sep. 29, 1975, Ser. No. 617,504

Claims priority, application United Kingdom, Oct. 1, 1974, 42516/74

Int. Cl.[2] C08L *61/06*

U.S. Cl. 260—37 N **10 Claims**

1. A method of producing substantially homogeneously pigmented injection mouldings from a thermosetting moulding material, said method comprising supplying an injection moulding machine of the type having a screw housing having a hopper, a feed zone and intermediate and nozzle zones, and an internal wall defining a screw receiving bore, and wherein the internal wall is provided with grooves extending along the bore from the feed zone and through the intermediate and nozzle zones; supplying a non-homogeneous mixture of pigment component and an aminoplast moulding material having a particle size not greater than 150 microns to the hopper of the moulding machine and utilizing the screw housing to effect complete substantially homogeneous dispersion of the pigment component through the aminoplast moulding material, and injection moulding the resultant pigmented thermosetting moulding material.

4,127,556
CERAMIC FIBER MOLDING FOR MANIFOLD REACTORS

Kenji Ushitani; Fumiyoshi Noda, and Toshikazu Ikeda, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1976, Ser. No. 725,456

Claims priority, application Japan, Apr. 29, 1975, 50-117428

Int. Cl.[2] C08K *3/22, 3/36*

U.S. Cl. 252—62 **9 Claims**

1. A ceramic fiber molding comprising Al_2O_3—SiO_2 or SiO_2 ceramic fibers and a binder molded into a product having a hardness of 20°–55° as measured by the Japan Rubber Association Standard SRIS-0101, a tensile strength of 120–1500 g/cm^2, and a molded density of 0.06–0.35 g/cm^3.

4,127,557
REINFORCED POLYARYLENE ESTERS

Oliver D. Deex, Clayton, Mo., and Virgil W. Weiss, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 709,469, Jul. 28, 1976, which is a continuation-in-part of Ser. No. 654,127, Feb. 2, 1976, abandoned, and Ser. No. 654,128, Feb. 2, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 806,388

Int. Cl.[2] C08G *63/18;* **C08L** *67/02*

U.S. Cl. 260—40 R **36 Claims**

1. A molding resin comprising an intimate blend of a polyarylene ester and a reinforcing amount of a reinforcing filler, wherein the polyarylene ester consists essentially of the condensation product of at least one C_8 to C_{25} aromatic dicarboxylic acid and a diphenol comprising from about 60 to 100 mol percent 1,2-bis-(4-hydroxyphenyl)ethane and from about 40 to 0 mol percent of at least one C_6 to C_{25} diphenol and wherein the inherent viscosity of the polyarylene ester at 30° C. determined at a concentration of 0.5 grams polyester per 100 ml solution in a solvent mixture of 60 parts by weight of phenol and 40 parts by weight of symtetrachloroethane is at least about 0.5, and the melt viscosity of the polyarylene ester at 320° C. determined at a shear rate of 100 sec^{-1} with a capillary rheometer is less than about 10^5 poises.

4,127,558

COMPOSITIONS OF A POLYPHENYLENE ETHER RESIN AND ALKENYL AROMATIC RESINS MODIFIED WITH EPDM RUBBER CONTAINING PROPYLENE

Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 13, 1977, Ser. No. 787,254

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.[2] C08L *71/04, 23/16*

U.S. Cl. 260—42.18 24 Claims

1. An improved thermoplastic molding composition which comprises:

(a) from 20 to 65% by weight of a polyphenylene ether resin and

(b) from 35 to 80% by weight of an alkenyl aromatic resin that is modified with a rubbery interpolymer of a mixture of mono-olefins and a polyene by polymerizing an alkenyl aromatic monomer in the presence of the rubbery interpolymer, the rubbery interpolymer being comprised of particles having a median diameter less than about two microns, wherein the improvement comprises the rubbery interpolymer having a propylene content not greater than about 45% by weight.

4,127,559

FLAME-RETARDANT POLYMER COMPOSITION

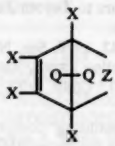
Jack Newcombe, Tulsa, Okla., assignor to Cities Service Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 115,081, Feb. 12, 1971, abandoned. This application Aug. 18, 1972, Ser. No. 281,692

Int. Cl.[2] C08K *5/06, 5/02*

U.S. Cl. 260—45.75 B 41 Claims

1. A composition comprising a normally flammable organic polymer and a flame-retarding amount of a flame retardant corresponding to the formula:



wherein X is chloro or bromo, Q is halo, hydrogen, or a hydrocarbyl or hydrocarbyloxy group, and Z is a monocyclic divalent saturated polybromocycloalkylene group containing 5–16 carbon atoms and 2–6 bromine atoms which are paired in vicinal positions; said valences being on adjacent carbon atoms.

4,127,560

MELT POLYMERIZATION PROCESS FOR PREPARING A MELT PROCESSABLE RESORCINOL PHTHALATE POLYESTER UTILIZING A METAL ACETATE CATALYST

Charles E. Kramer, Florham Park, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 8, 1977, Ser. No. 822,579

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—273 33 Claims

1. A process for preparing a melt processable resorcinol phthalate polyester which comprises:

(a) reacting resorcinol diacetate with a phthalic acid selected from the group consisting of isophthalic acid and a mixture of isophthalic and terephthalic acid wherein the terephthalic acid is present therein in an amount not greater than about 30 mole percent of said mixture, which reaction is conducted in the presence of a metal acetate catalyst wherein said metal is selected from the group consisting of cations of alkali and alkaline earth metals and mixtures thereof and at a temperature of about 180° to about 240° C. for a period sufficient to form a non-volatile pre-polymer; and

(b) polymerizing the non-volatile pre-polymer of step (a) at a temperature above the melting point of both the pre-polymer and the resulting polymerized product in the presence of a metal catalyst wherein said metal is selected from the group consisting of cations of alkali and alkaline earth metals and mixtures thereof to yield a polyester having an inherent viscosity of about 0.4 to about 1.5.

4,127,561

POLYCARBONATES AND A PROCESS FOR THEIR PREPARATION

Wolfgang Alewelt; Günter Jacobs; Dieter Margotte, and Erich Lux, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 27, 1978, Ser. No. 881,974

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711184

Int. Cl.[2] C08G *63/62*

U.S. Cl. 528—199 14 Claims

1. In a process for the preparation of thermoplastic, aromatic polycarbonates according to the phase boundary polycondensation reaction using tertiary amines as catalysts, the improvement wherein the tertiary amines are distilled beforehand over reducing agents and/or acid anhydrides with the exclusion of atmospheric oxygen.

4,127,562

METHOD OF PREPARING COATINGS

Felix Schilde, Wulfen; Johann Obendorf, Dorsten, and Volker Kulisch, Gladbeck, all of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 505,441, Sep. 12, 1974, abandoned. This application Nov. 4, 1976, Ser. No. 738,809

Int. Cl.[2] C08L *63/00;* C08G *59/06*

U.S. Cl. 528—94 5 Claims

1. In a method for making coatings by the elevated temperature reaction of a mixture consisting essentially of a hardener, conventional varnish additives and 1,2-epoxy compounds having at least one 1,2-epoxy group in the molecule, said mixture being dissolved in an organic solvent selected from the group of ketones, alcohols, aromatics and esters, the improvement which consists essentially of using as the hardener a cyclic amidine selected from the group consisting of 2-ethyl-1,4,5,6-tetrahydropyrimidine and 2-benzyl-1,4,5,6tetrahydropyrimidine.

4,127,563

LOW PH PREPARATION OF CATIONIC STARCHES AND FLOURS

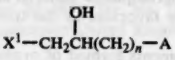
John C. Rankin, and Bliss S. Phillips, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,399

Int. Cl.[2] C08B *31/08*

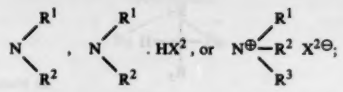
U.S. Cl. 536—50 11 Claims

1. A method for preparing cationic starchy materials without forming the epoxide outside the reaction mixture comprising reacting a starch-containing material (SCM) with an etherifying reagent having the structural formula



wherein:

A is



R^1 and R^2 are independently selected from the group of C_1–C_4 straight or branched alkyl radicals or they are joined to form a cyclic structure, and R^3 is hydrogen or a C_1–C_4 straight or branched alkyl radical, with the proviso that the total number of carbon atoms in R^1, R^2, and R^3 does not exceed 8; X^1 and X^2 are halogen atoms; and n is 1–3,

wherein said SCM and said etherifying reagent are reacted in a dry state at a pH in the range of 5–9.

4,127,564

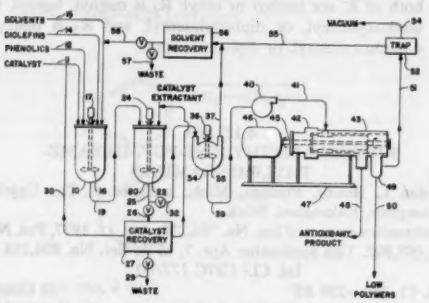
MELT PROCESSING RECOVERY OF HIGH PURITY POLYMERIC ANTIOXIDANTS

William L. Sanborn, Saratoga, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Jun. 9, 1976, Ser. No. 694,504

Int. Cl.² C08G *65/40*; C08K *5/13*

U.S. Cl. 528—481 **8 Claims**



1. The process for recovering a diolefin-phenolic copolymer antioxidant from a crude condensation reaction product containing the copolymer, reaction solvent, catalyst and monomers and polymeric contaminants having a molecular weight below about 500 Daltons which comprises:

A. removing catalyst from the reaction product and adjusting the reaction solvent content into the range of up to 50%w to yield an adjusted reaction product,

B. fusing the adjusted reaction product and maintaining the fused product at a surface area of not less than 4 cm^2 per gram, a temperature of from 200° C. to 425° C. and an absolute pressure of from 0.1 to 10 mm Hg for from 0.5 to 7.5 minutes thereby forming an overhead fraction comprising solvent, monomers and low molecular weight polymeric contaminants and a bottoms fraction consisting essentially of the copolymer antioxidant and,

C. recovering the copolymer antioxidant-containing bottoms fraction.

4,127,565

PROCESS FOR MAKING FIBER-FORMING POLYESTERS

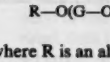
Henry L. King, Cary, and Chester C. Wu, Raleigh, both of N.C., assignors to Monsanto Company, Decatur, Ala.

Filed Dec. 22, 1977, Ser. No. 863,288

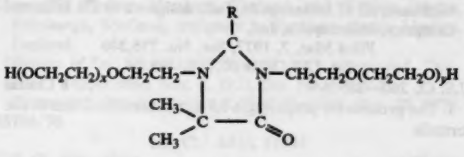
Int. Cl.² C08G *63/20, 63/68*

U.S. Cl. 528—283 **13 Claims**

1. A flame retardant and easily dyeable fiber-forming polyester polymer containing (A) 82–98 weight percent ethylene terephthalate; (B) 8 to 1 weight percent of a dyeability improver selected from the group consisting of



where R is an alkyl group containing from about 8 to about 20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene, butylene and isomers thereof, and mixtures of the above, and x has a value of about 8–20, and



where R is O, $(CH_3)_2$ or H_2 and the sum of x and y is 4–30, and; (C) 10 to 1 weight percent of a phosphine oxide selected from the group consisting of bis(carboxyethyl) methyl phosphine oxide and bis(3-hydroxypropyl) phenyl phosphine oxide.

4,127,566

PROCESS FOR PREPARATION OF FLAME RETARDANT POLYESTERS

Henry L. King, Cary, and Chester C. Wu, Raleigh, both of N.C., assignors to Monsanto Company, Decatur, Ala.

Filed Dec. 22, 1977, Ser. No. 863,285

Int. Cl.² C08G *63/14*

U.S. Cl. 528—283 **6 Claims**

1. In a process for preparation of fiber-forming polyesters by polycondensing a glycol phthalate and a phosphine oxide having the formula

where R, R′ and R″ are alkyl, aryl, alkylaryl or cycloalkyl radicals and at least one of R, R′ and R″ contains an ester or an ester forming group, in the presence of an effective amount of the reaction product of germanium dioxide and a tetraalkyl ammonium hydroxide.

4,127,567

BIS-(1-SUBSTITUTED PHENYLAZO-2-HYDROXYNAPHTHALENE-3-CARBOXAMIDO)NAPHTHALENES

Willy Forter, Allschwil, and Hans-Rudolf Ott, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

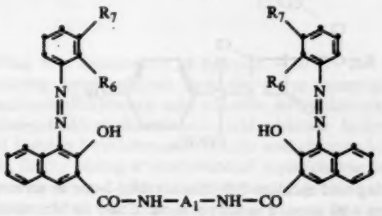
Continuation of Ser. No. 422,559, Dec. 6, 1973, abandoned. This application Jun. 29, 1976, Ser. No. 700,834

Claims priority, application Switzerland, Dec. 12, 1972, 18034/72; Jan. 18, 1973, 685/73

Int. Cl.² C09B *33/14, 43/12*

U.S. Cl. 260—174 **4 Claims**

1. A compound of having the formula



wherein A_1 is 1,4-naphthylene or 1,5-naphthylene, and each R_6 and R_7 is chloro or bromo.

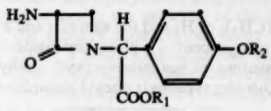
4,127,568

PROCESS FOR 3β-AMINOAZETIDIN-2-ONES

Robin D. G. Cooper; Gary A. Koppel, and Lawrence J. McShane, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

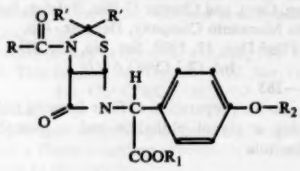
Filed Mar. 7, 1977, Ser. No. 775,240
Int. Cl.[2] C07D *205/08, 498/04*
U.S. Cl. 260—239 A **8 Claims**

1. The process for preparing a 3β-aminoazetidin-2-one of the formula

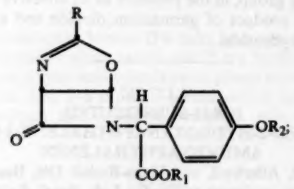


which comprises the steps of

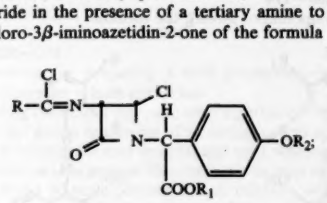
(a) reacting the thiazolidine-azetidinone of the formula



at a temperature between about 25° C. and about 100° C. with between about 2 and about 4 moles of mercuric acetate per mole of said thiazolidine-azetidinone in a water-miscible organic solvent containing between about 10 percent and about 60 percent water to form the oxazoline-azetidinone of the formula

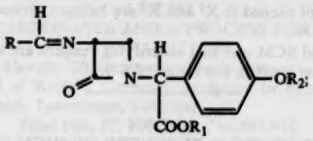


(b) reacting said oxazoline-azetidinone in an inert solvent at a temperature between about −10° C. and about 45° C. with at least a 0.1 molar excess of a halogenating agent selected from phosphorus pentachloride, phosphorus trichloride, antimony pentachloride, and antimony trichloride in the presence of a tertiary amine to form the dichloro-3β-iminoazetidin-2-one of the formula



(c) heating said dichloro-3β-iminoazetidin-2-one in an inert solvent with about 2 moles per mole of said dichloroazetidin-2-one of an organo tin hydride of the formula

wherein R_3, R_4, and R_5 independently are C_1–C_4 alkyl, phenyl, or phenyl substituted by methyl or chloro, in the presence of azo-bisisobutyronitrile to form the deschloro 3β-iminoazetidin-2-one of the formula



(d) hydrolyzing in the presence of an acid said 3β-iminoazetidin-2-one;

(e) recovering the salt of said 3β-aminoazetidin-2-one formed with said acid; and

(f) feeding said 3β-aminoazetidin-2-one from said salt. where in the above formulas R is C_1–C_3 alkyl, phenyl, or benzyl; both of R′ are methyl or ethyl; R_1 is methyl, benzyl, 4-methoxybenzyl, or diphenylmethyl; and R_2 is benzyl, 4-methoxybenzyl, or diphenylmethyl.

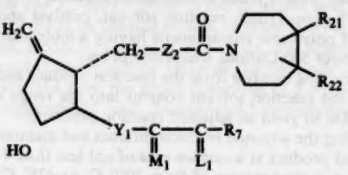
4,127,569

9-DEOXY-9-METHYLENE-PGF$_1$-HEXAMETHYLIMINOAMIDES

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 786,250, Apr. 11, 1977, Pat. No. 4,098,805. This application Apr. 7, 1978, Ser. No. 894,216
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—239 BF **32 Claims**

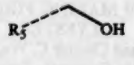
1. A prostaglandin analog of the formula



wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2C-H_2—

wherein M_1 is

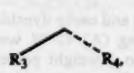
or



wherein

R_5 is hydrogen or methyl;

wherein L_1 is



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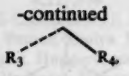
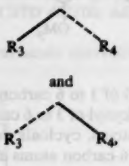


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_2 is

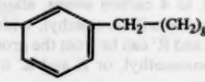
$-(CH_2)_3-(CH_2)_g-CH_2-$, (1)

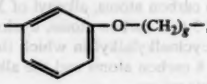
$-(CH_2)_3-(CH_2)_g-CF_2-$, (2)

$-CH_2-O-CH_2-(CH_2)_g-CH_2-$, (3)

$-C\equiv C-CH_2-(CH_2)_g-CH_2-$, (4)

$-CH_2-C\equiv C-(CH_2)_g-CH_2-$, (5)

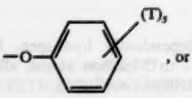
 (6)

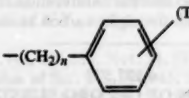
 (7)

wherein g is one, 2 or 3;

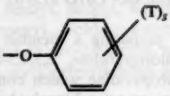
wherein R_7 is

$-(CH_2)_m-CH_3$,





wherein m is one to 5, inclusive, h is zero or one, T is chloro, fluoro, trifluromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and s are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_{21} and R_{22} are hydrogen, alkyl of one to 12 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive.

4,127,570

β-AMINOPENICILLINS, SALTS AND ESTERS

George R. Fosker, Horsham, England, and William Davies, Edinburgh, Scotland, assignors to Beecham Group Limited, England

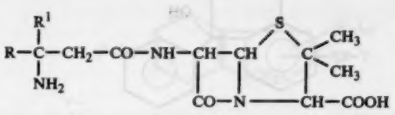
Division of Ser. No. 182,135, Sep. 20, 1971, abandoned. This application Nov. 8, 1973, Ser. No. 413,862

Claims priority, application United Kingdom, Sep. 25, 1970, 45704/70

Int. Cl.[2] A61K *31/43*

U.S. Cl. 260—239.1 **11 Claims**

1. A penicillin of the formula

 (IV)

or a non-toxic pharmaceutically acceptable salt or in vivo hydrolysable ester thereof, in which formula R and R^1 taken together with the carbon atom to which they are attached form a cyclopentyl, cyclohexyl or cycloheptyl ring.

4,127,571

PROCESS FOR PREPARING PENICILLINS

Renato Broggi, and Marco Falciani, both of Milan, Italy, assignors to Dobfar S.p.A., Milan, Italy

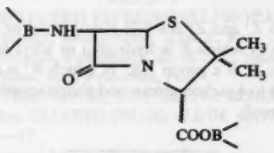
Filed Dec. 12, 1977, Ser. No. 859,525

Claims priority, application Italy, Dec. 16, 1976, 30481A/76

Int. Cl.[2] C07D *49/12, 49/04*

U.S. Cl. 260—239.1 **5 Claims**

1. A process for preparing penicillins, wherein at room temperature 6-APA is treated with a polar anhydrous organic solvent selected from the group comprising acetonitrile, tetrahydrofuran, methylene chloride and chloroform, adding a tertiary or secondary organic base selected from the group comprising dialkylamines and trialkylamines, and wherein the resulting mixture is cooled to a temperature of between −45° C. and −25° C., and has added thereto a cyclic derivative of boron selected from the group comprising ethylene chloroboronate, propylene chloroboronate and phenylene chloroboronate, in an amount of at least 2 moles of 6-APA, the temperature is increased to about 0° C., thus forming an intermediate compound having the formula



adding at a temperature of between −10° C. and 0° C. an acylating agent selected from the group comprising D(-)-αamino-α-phenylacetic acid chloride hydrochloride, D(-)-α-amino-p-hydroxy-phenylacetic acid chloride hydrochloride and 1-amino-1-cyclohexancarboxylic acid chloride hydrochloride, finally adding at completion of acylation reaction a mixture of water and hydrosoluble alcohol to provide an aqueous solution, from which the penicillin is isolated by known techniques.

4,127,572

METHOD OF USING 2(1H)-QUINAZOLINETHIONES

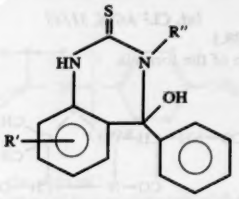
Thomas C. Britton, and Donald L. Trepanier, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 769,480, Feb. 17, 1977, Pat. No. 4,093,805. This application Feb. 8, 1978, Ser. No. 876,078

Int. Cl.[2] A61K *31/505, 31/535*

U.S. Cl. 424—248.5 **10 Claims**

1. A method for treating the symptoms of central nervous system depression or anxiety in a mammal which comprises administering to said mammal an antidepressant or antianxiety effective amount of a compound or a pharmaceutically-acceptable salt thereof having the general formula



wherein R′ represents alkyl, halo and hydrogen and R″ represents amino, dialkylaminoalkyl, (pyralidinyl) ethyl(-piperidenyl)ethyl and 4-morpholinylalkyl and further including the pharmaceutically-acceptable salts thereof and wherein any alkyl referes to a moiety having from 1 to 4 carbon atoms.

4,127,573

DITETRAZOLE SUBSTITUTED ACRIDONE COMPOUNDS

John H. Gorvin, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Sep. 5, 1973, Ser. No. 394,425

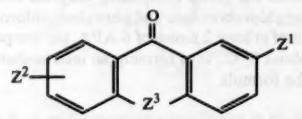
Claims priority, application United Kingdom, Sep. 6, 1972, 41432/72; Feb. 20, 1973, 8292/73

Int. Cl.[2] C07D *401/14;* A61K *31/435*

U.S. Cl. 546—103 **7 Claims**

1. 2,6-Di-(5-tetrazolyl)acridone and pharmaceutically acceptable salts thereof.

6. A tricyclic compound of the formula (I)



(I)

in which both Z^1 and Z^2 is a 5-(1-R)tetrazolyl or a 5-(2-R)tetrazolyl group in which R is hydrogen or alkyl having 1 to 6 carbon atoms; Z^3 is a group NR^1 in which R^1 is hydrogen or alkyl having 1 to 4 carbon atoms; and pharmaceutically acceptable salts thereof.

4,127,574

4-HYDROXY-3-SULFONYL-QUINOLIN-2(1H)-ONES

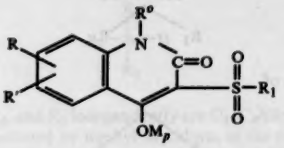
Goetz E. Hardtmann, Morristown, and Gary M. Coppola, Parsippany, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 1, 1976, Ser. No. 662,706

Int. Cl.[2] C07D *213/71*

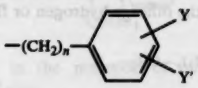
U.S. Cl. 546—90 **22 Claims**

1. A compound of the formula:



wherein

R° is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



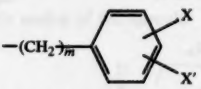
Mp is hydrogen or a cation forming a pharmaceutically acceptable salt,

n is 0 or 1,

Y and Y′ are independently hydrogen, fluoro, chloro, or bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl,

R and R′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, with the proviso that only one of R and R′ can be from the group consisting of nitro and trifluoromethyl, or R and R′ together form 6,7-methylenedioxy,

R_1 is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl portion is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



m is 0 or 1, and

X and X′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or trifluoromethyl

with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom.

4,127,575

PREPARATION OF CHLORO SUBSTITUTED PYRIDINES

Stanley D. McGregor, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 734,150, Oct. 20, 1976, abandoned, which is a continuation of Ser. No. 537,053, Dec. 27, 1974, abandoned. This application Jun. 20, 1977, Ser. No. 807,955

Int. Cl.[2] C07D *213/61*

U.S. Cl. 546—345 **11 Claims**

1. A method for preparing a member selected from the group of 2,3,5-trichloropyridine, 2,3,4,5-tetrachloropyridine and 2,3,5,6-tetrachloropyridine which comprises reacting an appropriate trichloro- or tetrachlorohydrazinopyridine reactant with an alkaline hypochlorite in the presence of a reaction medium at temperatures of from about room temperature to the boiling point of the reaction mixture and recovering the desired product.

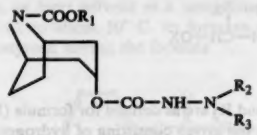
4,127,576

NORTROPINE-CARBAZATE DERIVATIVES

Gyula Mikite; Lujza Petocz; Ibolya Kosoczky, and Katalin Grasser, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Nov. 29, 1977, Ser. No. 855,705
Claims priority, application Hungary, Dec. 8, 1976, EE 2463
Int. Cl.[2] C07D *471/08*; A61K *31/46*
U.S. Cl. 424—265 14 Claims

1. A nortropinone-carbazate derivative of the formula (I),



(I)

wherein

R_1 is a C_{1-4} alkyl, phenyl or halophenyl group,

R_2 is hydrogen or a C_{1-4} alkyl, hydroxy-C_{1-4}alkyl, C_{1-4}acyl, phenoxycarbonyl or C_{1-4}alkoxycarbonyl group, and

R_3 is hydrogen or a C_{1-4} alkyl or C_{1-4} acyl group, or

R_2 and R_3 may form together a C_{1-10} alkylene group attached to the nitrogen atom with a double bond,

or a pharmaceutically acceptable acid addition salt thereof.

14. A narcosis potentiating pharmaceutical composition containing an effective amount of a compound as defined in claim 1, and a conventional pharmaceutical adjuvant and/or auxiliary agent.

4,127,577

AMINOMETHANOBENZAZOCINE PROCESS

Mark P. Wentland, North Greenbush, and Noel F. Albertson, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 634,355, Nov. 24, 1975, Pat. No. 4,032,526, which is a division of Ser. No. 507,965, Sep. 20, 1974, Pat. No. 3,957,793. This application Sep. 20, 1976, Ser. No. 725,111
Int. Cl.[2] C07D *221/26*
U.S. Cl. 546—97 1 Claim

1. The process which comprises dehydrating and aromatizing 1,2,3,4,5,6,7,8,9,10-decahydro-3-Q'-8-hydroxyimino-5-X-6-Y-11-Z-11-Z'-2,6-methano-3-benzazocine to produce 1,2,3,4,5,6-hexahydro-3-Q'-8-amino-5-X-6-Y-11-Z-11-Z'-2,6-methano-3-benzazocine wherein:

Q' is hydrogen, benzyl, propyl, isobutyl, neopentyl, allyl, 2-methyl-2-propenyl, 2-chloro-2-propentyl, cis-3-chloro-2-propenyl, cis-3-chloro-2-butenyl, trans-3-chloro-2-butenyl, propargyl, cyclopropylmethyl or (2,2-dichlorocyclopropyl)methyl;

X is hydrogen, methyl or ethyl;

Y is hydrogen, methyl, ethyl, propyl, allyl or phenyl;

Z is hydrogen, methyl, ethyl or hydroxy; and

Z' is hydrogen, methyl or ethyl.

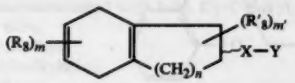
4,127,578

DIENE INTERMEDIATES FOR INDANTETROLS

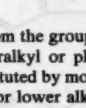
Frederic P. Hauck, Somerville; Joyce Reid, Highland Park; Venkatachala L. Narayanan, Hightstown; Christopher M. Cimarusti, Hamilton; Rudiger D. Haugwitz, Titusville, all of N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 749,868, Dec. 13, 1976, abandoned, which is a division of Ser. No. 666,983, Mar. 15, 1976, Pat. No. 4,092,318, which is a division of Ser. No. 570,121, Apr. 21, 1975, Pat. No. 3,984,407, which is a division of Ser. No. 372,448, Jun. 21, 1973, Pat. No. 3,894,031, which is a continuation of Ser. No. 71,229, Sep. 10, 1970, abandoned. This application Sep. 12, 1977, Ser. No. 832,751
The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.
Int. Cl.[2] C07D *207/06, 211/26, 211/12*
U.S. Cl. 546—205 4 Claims

1. A compound of the structure



wherein X is a single bond or a straight or branched chain alkylene group containing from 1 to 10 carbons, Y is



wherein R_7 is selected from the group consisting of hydrogen, lower alkyl, phenylloweralkyl or phenylloweralkyl wherein the aromatic ring is substituted by mono- or diloweralkyl, halo or mono-, di- or trinitro or lower alkoxy, and

is taken together to form a piperidyl or pyrrolidyl radical optionally substituted by loweralkyl, diloweralkyl, loweralkoxy, hydroxy or aminomethyl, R_8 and R'_8 are lower alkyl or monocyclic cycloloweralkyl, n is 1 to 3, m and m' are 0, 1 or 2; stereoisomers thereof, physiologically acceptable acid salts thereof, physiologically acceptable quaternary salts thereof, and N-oxides thereof.

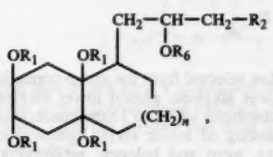
4,127,579

SUBSTITUTED PIPERIDINYLPROPANOLS

Frederic P. Hauck, Bridgewater; Rita T. Fox, Princeton, and John R. Watrous, Pennington, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

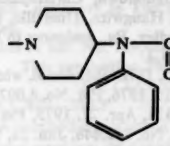
Filed Nov. 25, 1977, Ser. No. 855,038
Int. Cl.[2] C07D *295/10, 413/04, 401/04*
U.S. Cl. 546—17 11 Claims

1. A compound having the formula

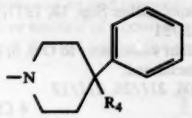


or a pharmaceutically acceptable salt thereof, wherein *n* is 0, 1 or 2; R_1 is alkanoyl having 2 to 7 carbon atoms; and R_2 is

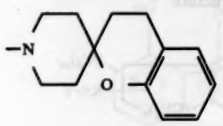
(i)



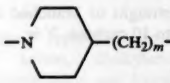
(ii)



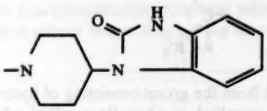
(iii)



(iv)

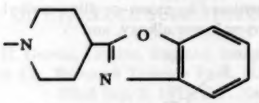


(v)



, or

(vi)



;

R_3 is alkyl of 1 to 4 carbon atoms; R_4 is cyano or hydroxy; R_5 is hydroxy or alkanoyloxy of 2 to 7 carbon atoms; R_6 is hydrogen or alkanoyl of 2 to 7 carbon atoms and *m* is 2, 3 or 4.

4,127,580

PROCESS FOR THE PREPARATION OF THIENO-PYRIDINE DERIVATIVES

Emile Braye, Auterive, France, assignor to Parcor, Paris, France

Continuation of Ser. No. 652,805, Jan. 27, 1976, abandoned. This application Mar. 7, 1977, Ser. No. 775,314

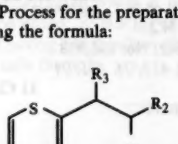
Claims priority, application France, Feb. 7, 1975, 75 03968; Jul. 30, 1975, 75 23786

Int. Cl.[2] C07D *283/00*

U.S. Cl. 546—114 **8 Claims**

1. Process for the preparation of thieno-pyridine derivatives having the formula:

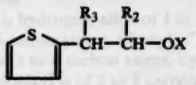
(I)



in which R_1 is a member selected from the group consisting of C_{1-7} alkyl; phenyl lower alkylene; phenyl lower alkylene in which the phenyl is substituted with 1 to 3 substituents selected from the group consisting of lower alkyl, hydroxy, lower acyloxy, lower alkoxy, nitro and halogen; naphthyl lower alkylene; thienyl lower alkylene; diphenyl lower alkylene; phenyl hydroxy-lower-alkylene; phenyl hydroxy-lower-alkylene in which the phenyl is substituted with 1 to 3 substituents selected from the group consisting of lower alkyl, hydroxy, lower acyloxy, lower alkoxy, nitro and halogen; naphthyl hydroxy-lower-alkylene; thienyl hydroxy-lower-alkylene; and diphenyl hydroxy-lower-alkylene; R_2 is selected from the group consisting of hydrogen and lower alkyl; and R_3 is hydrogen, comprising:

(a) reacting a derivative having the formula:

(II)

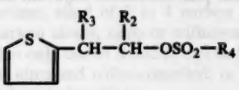


in which R_2 and R_3 are as defined for formula (I) and X is selected from the group consisting of hydrogen, an alkali metal and a radical MgY in which Y represents halogen, with a halosulfonyl derivative having the formula:

$$Hal - SO_2 - R_4 \qquad (III)$$

in which Hal represents halogen and R_4 is selected from the group consisting of methane sulfonyl, trichloromethane sulfonyl, trifluoromethane sulfonyl, benzene sulfonyl, paratoluene sulfonyl, m. acetyl benzene sulfonyl and p. bromophenyl sulfonyl, to give a compound having the formula:

(IV)

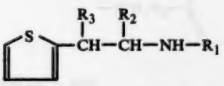


(b) reacting said derivative (IV) with an amine of the formula

$$R_1 - NH_2 \qquad (V)$$

in which R_1 is as defined for formula (I), to give a compound having the formula:

(VI)



and (c) subsequently cyclising said derivative (VI) with formaldehyde to give the derivative of the formula (I).

4,127,581

METHOD FOR THE PREPARATION OF 3-PHENYL-5-SUBSTITUTED-4(1H)-PYRIDONES

Riaz F. Abdulla, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

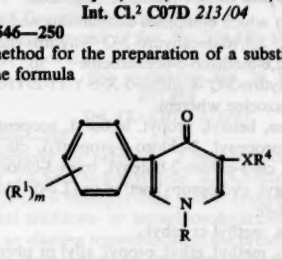
Filed Sep. 8, 1977, Ser. No. 831,455

Int. Cl.[2] C07D *213/04*

U.S. Cl. 546—250 **6 Claims**

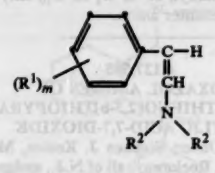
1. A method for the preparation of a substituted pyridone having the formula

(I)

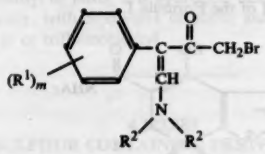


which comprises:

(a) treating an enamine having the formula


(II)

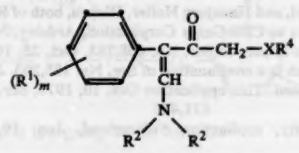
with bromoacetyl bromide in the presence of an acid scavenger in an inert solvent at a temperature of from about −25° C. to about 50° C. to form an α-bromoacetyl-β-aminostyrene having the formula


(III)

(b) treating the α-bromoacetyl-β-aminostyrene with an anion represented by

$$(-)XR^4 \qquad \text{(IV)}$$

in an inert solvent at a temperature of from about 0° C. to about 100° C. to give an α-substituted acetyl-β-aminostyrene having the formula


(V)

(c) formylating or aminoformylating the α-substituted acetyl-β-aminostyrene by treatment with

(1) a C_1–C_2 alkyl formate and an alkali metal C_1–C_2 alkoxide in an aprotic solvent at a temperature of from about −25° C. to about 25° C., or

(2) an N,N-dimethylformamide acetal at a temperature within the range of from about 50° C. to about 150° C., and treating with an amine, RNH_2, in a protic solvent at a temperature of from about −20° C. to about 100° C. to produce the substituted pyridone;

wherein R represents
C_1–C_3 alkyl,
C_1–C_3 alkyl substituted with halo, cyano, carboxy, or methoxycarbonyl,
C_2–C_3 alkenyl,
C_2–C_3 alkynyl,
C_1–C_3 alkoxy,
acetoxy, or
dimethylamino, provided that R comprises no more than 3 carbon atoms; each R^1 independently represents
halo,
C_1–C_8 alkyl,
C_1–C_8 alkyl substituted with halo,
C_1–C_8 alkyl monosubstituted with phenyl, cyano, or C_1–C_3 alkoxy,
C_2–C_8 alkenyl,
C_2–C_8 alkenyl substituted with halo,
C_2–C_8 alkynyl,
C_2–C_8 alkynyl substituted with halo,
C_3–C_6 cycloalkyl,
C_4–C_6 cycloalkenyl,
C_4–C_8 cycloalkylalkyl,
C_1–C_3 alkanoyloxy,
C_1–C_3 alkylsulfonyloxy,
phenyl,
phenyl monosubstituted with halo, C_1–C_3 alkyl, C_1–C_3 alkoxy, or nitro,
nitro,
cyano,
carboxy,
hydroxy,
C_1–C_3 alkoxycarbonyl,
—O—R^3,
—S—R^3,
—SO—R^3, or
—SO_2—R^3;
R^3 represents
C_1–C_{12} alkyl,
C_1–C_{12} alkyl substituted with halo,
C_1–C_{12} alkyl monosubstituted with phenyl, cyano, or C_1–C_3 alkoxy,
phenyl,
phenyl monosubstituted with halo, C_1–C_3 alkyl, C_1–C_3 alkoxy or nitro,
C_3–C_6 cycloalkyl,
C_4–C_8 cycloalkylalkyl,
C_2–C_{12} alkenyl,
C_2–C_{12} alkenyl substituted with halo,
C_2–C_{12} alkynyl,
C_2–C_{12} alkynyl substituted with halo,
provided that R^3 comprises no more than 12 carbon atoms;
each R^2 independently represents C_1–C_4 alkyl or both R^2 groups taken together with the nitrogen atom to which they are attached represent
pyrrolidino,
piperidino, or
morpholino;
R^4 represents
C_1–C_6 alkyl,
C_1–C_6 alkyl substituted with halo,
C_1–C_6 alkyl mono- or disubstituted with hydroxy, CH_2R^5,
benzyl,
phenyl or
phenyl substituted with halo, C_1–C_3 alkyl, halo C_1–C_3 alkyl or C_1–C_3 alkoxy;
R^5 represents
C_2–C_5 alkenyl,
C_2–C_5 alkenyl substituted with halo or
C_2–C_5 alkynyl;
X represents oxygen or sulfur; and
m represents 0, 1 or 2.

4,127,582

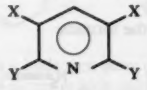
METHOD OF PREPARING ALKYL HALOPYRIDINYLOXYALKANOATES

Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1976, Ser. No. 754,796
Int. Cl.² C07D *213/79*
U.S. Cl. 546—302 **18 Claims**

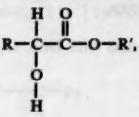
1. A method for preparing alkyl halopyridinyloxyalkanoate compounds which comprises: reacting

(a) a halopyridine of the formula



wherein each X and each Y substituent is individually selected from the group consisting of chlorine, fluorine, bromine and hydrogen, with the proviso that both Y substituents are not hydrogen, and

(b) an alkyl hydroxy alkanoate of the formula



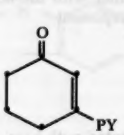
wherein R is either hydrogen or CH_3 and R′ is either (i) a straight or branched chain alkyl group of from 1 to 4 carbon atoms or (ii) a moiety of the formula $RCHCH_2OR_1$, wherein R_1 is a straight or branched chain alkyl group of from 1 to 4 carbon atoms;
in the presence of an alkali metal carbonate promoter thereby to produce an alkyl halopyridinyloxyalkanoate compound.

4,127,583
PREPARATION OF 3-(PYRIDINYL)-2-CYCLOHEXENE-1-ONES

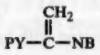
Karl O. Gelotte, Nassau; Andrew W. Zalay, Albany, and Malcolm R. Bell, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 820,402, Jul. 29, 1977, which is a division of Ser. No. 737,392, Nov. 1, 1976, Pat. No. 4,075,215, which is a division of Ser. No. 668,451, Mar. 19, 1976, Pat. No. 4,026,900. This application Jan. 19, 1978, Ser. No. 870,753
Int. Cl.[2] C07D *213/46*
U.S. Cl. 546—340 **4 Claims**

1. The process for preparing a 3-(pyridinyl)-2-cyclohexen-1-one having the formula



where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, which comprises reacting methyl vinyl ketone with 1-(pyridinyl)-1-(lower-tertiary-amino)-ethylene of the formula



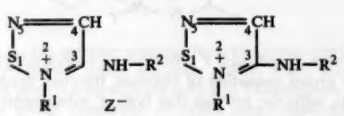
where PY is defined as above and NB is lower-tertiary-amino selected from piperidino, morpholino, pyrrolidino and di-(lower-alkyl)amino, and hydrolyzing in situ the resulting 1-(pyridinyl)-3-(lower-tertiary-amino)-1,3-cyclohexadiene to produce the said 3-(pyridinyl)-2-cyclohexen-1-one.

4,127,584
2,3-SUBSTITUTED-1,2,5-THIADIAZOLIUM SALT ANTIMICROBIALS

Joshua Rokach, Chomedey-Lavalr, Canada; Edward J. Cragoe, Jr, Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Grant W. Reader, Montreal, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 11, 1977, Ser. No. 850,769
Int. Cl.[2] C07D *285/10*; A01N *9/12, 21/02*; A61K *31/425*
U.S. Cl. 260—306.8 D **9 Claims**

1. A compound of the formula:



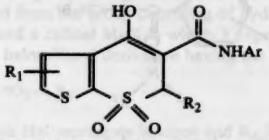
where R^1 is C_1 to C_{16} straight or branched chain alkyl, benzyl, phenyl, or halololoweralkyl; R^2 is C_1 to C_{16} alkyl, benzyl, or phenyl and Z^- is a counter anion.

4,127,585
ISOXAZOL AMIDES OF 4-HYDROXY-6H-THIENO[2,3-b]THIOPYRAN-5-CARBOXYLIC ACID-7,7-DIOXIDE

Jagadish C. Sircar, Dover; Stephen J. Kesten, Morris Plains, and Harold Zinnes, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 749,491, Dec. 10, 1976, Pat. No. 4,082,757. This application Dec. 27, 1977, Ser. No. 864,987
Int. Cl.[2] C07D *495/04*
U.S. Cl. 260—307 H **2 Claims**

1. A compound of the Formula I:



I

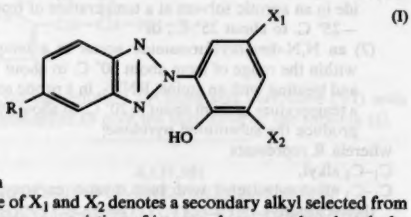
wherein R_1 is hydrogen, halogen or lower alkyl; R_2 is hydrogen, lower alkyl or phenyl; and Ar is isoxazolyl or isoxazolyl substituted with lower alkyl, halogen, lower alkoxy or trifluoromethyl; and its pharmaceutically acceptable salts.

4,127,586
LIGHT PROTECTION AGENTS

Jean Rody, Basel, and Hansjorg Heller, Rieben, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 408,763, Oct. 23, 1973, abandoned, which is a continuation of Ser. No. 155,293, Jun. 21, 1971, abandoned. This application Oct. 10, 1975, Ser. No. 621,453
Claims priority, application Switzerland, Jun. 19, 1970, 9319/70
Int. Cl.[2] C07D *249/20*
U.S. Cl. 260—308 B **6 Claims**

1. A compound of the formula



(I)

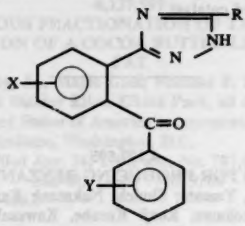
in which
(a) one of X_1 and X_2 denotes a secondary alkyl selected from the group consisting of isopropyl or secondary butyl, the other of X_1 and X_2 denotes secondary-butyl, tert. butyl, tert. amyl, tert. octyl, secondary-nonyl, tertiary. nonyl, 1-phenylethyl, cyclohexyl, or cyclooctyl
(b) one of X_1 and X_2 denotes 1-phenylethyl, the other of X_1 and X_2 denotes methyl; and R_1 denotes hydrogen or chloro.

4,127,587
TRIAZOLYLBENZOPHENONES

Peter C. Wade, Pennington, and Thomas P. Kissick, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 825,640, Aug. 18, 1977, Pat. No. 4,093,728. This application Jan. 12, 1978, Ser. No. 868,765
Int. Cl.[2] C07D *249/08*
U.S. Cl. 260—308 R **5 Claims**

1. A compound of the structure



wherein X is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro; Y is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro; and R is hydrogen, lower alkyl or trifluoromethyl.

4,127,588

SULPHUR CONTAINING DERIVATIVES

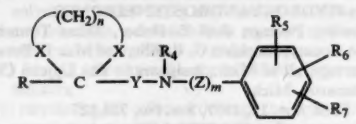
Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 728,668, Oct. 1, 1976, Pat. No. 4,073,797, which is a division of Ser. No. 532,990, Dec. 16, 1974, Pat. No. 4,003,914. This application Nov. 21, 1977, Ser. No. 853,620

Int. Cl.[2] C07D *409/02*

U.S. Cl. 260—327 M **11 Claims**

1. A compound of the formula



(I)

wherein R is a group of the formula

in which R_4 is hydrogen or lower alkyl; R_5, R_6 and R_7 each independently is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy or benzyloxy or two adjacent R_5, R_6 and R_7 symbols together are methylenedioxy or ethylenedioxy; X is a sulphur atom, SO or SO_2; Y is a straight-chain or branched-chain, aliphatic group which may be substituted with hydroxy and containing 2–8 carbon atoms, of which 2–4 carbon atoms are present in the chain; and Z is a straight-chain or branched-chain aliphatic group which may be substituted with hydroxy and containing 1–8 carbon atoms, of which 1–4 carbon atoms are present in the chain; *m* is zero or 1 and *n* is 2 or 3, and acid addition salts thereof.

4,127,589

4,5-SECO-STEROIDS

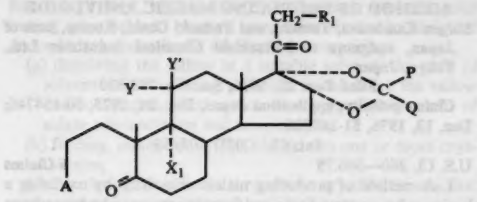
Christopher M. Cimarusti, Hamilton, and Seymour D. Levine, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 522,179, Nov. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,168, Dec. 20, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,534

Int. Cl.[2] C07D *317/70*; A61K *31/335*

U.S. Cl. 260—340.5 AS **23 Claims**

1. A steroid having the formula



wherein A is —C≡CH, —CH=CH_2, —CH_2CH_3, or

X_1 is hydrogen, chlorine, bromine, or fluorine; R_1 is hydrogen, hydroxyl, acyloxy, chlorine, bromine, fluorine or iodine; P is hydrogen, lower alkyl, or aryl; Q is lower alkyl or aryl; Y is hydrogen and Y′ is hydroxyl or together Y and Y′ and =O; wherein aryl is phenyl, naphthyl, or phenyl substituted with halogen, lower alkyl or lower alkoxy, and wherein acyloxy is a physiologically acceptable acid residue derived from a monocarboxylic acid having the formula R_2—COOH wherein R_2 is lower alkyl, cycloalkyl, aryl-lower alkyl or aryl, a polycarboxylic acid selected from the group consisting of malonic, glutaric, adipic, pimelic, and phthalic acids, or an inorganic acid selected from the group consisting of sulfuric, nitric and phosphoric acids.

4,127,590

PHOSPHORUS-CONTAINING COMPOUNDS

Seiji Endo; Takao Kashihara; Akitada Osako; Tatsuhiko Shizuki, and Tadashi Ikegami, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

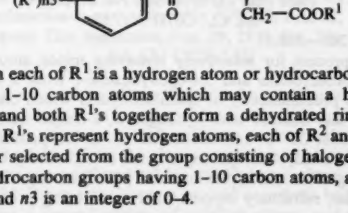
Filed Oct. 7, 1976, Ser. No. 730,512

Claims priority, application Japan, Oct. 14, 1975, 50-124164; Jan. 23, 1976, 51-6924; Feb. 13, 1976, 51-15088; Feb. 13, 1976, 51-15090

Int. Cl.[2] C07F *9/30*

U.S. Cl. 260—346.74 **1 Claim**

1. A phosphorus-containing compound represented by the formula



wherein each of R^1 is a hydrogen atom or hydrocarbon group having 1–10 carbon atoms which may contain a hydroxyl group, and both R^1's together form a dehydrated ring when both of R^1's represent hydrogen atoms, each of R^2 and R^3 is a member selected from the group consisting of halogen atoms and hydrocarbon groups having 1–10 carbon atoms, and each of *n*2 and *n*3 is an integer of 0–4.

4,127,591

METHOD OF PRODUCING MALEIC ANHYDRIDE

Shigeo Kamimura, Yamato, and Tadaaki Otaki, Komae, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Dec. 23, 1976, Ser. No. 753,830
Claims priority, application Japan, Dec. 26, 1975, 50-154746; Dec. 13, 1976, 51-149526
Int. Cl.[2] C07D 307/60
U.S. Cl. 260—346.75 6 Claims

1. A method of producing maleic anhydride by oxidizing a hydrocarbon material selected from unsaturated hydrocarbons having four or more carbon atoms, butane and mixtures thereof with molecular oxygen or a gas containing molecular oxygen in a gaseous phase and in the presence of a catalyst, characterized in that the catalyst used here contains vanadium, phosphorus, potassium and iron in the form of oxides, with these ingredients being contained in the following atomic ratios calculated per atom of vanadium: phosphorus, $\frac{3}{4}$ to 140 atoms; potassium, $\frac{1}{4}$ to 2 atoms; and iron, 1/10 to 70 atoms.

4,127,592

PROCESS OF THE PREPARATION OF HYDROXYFURENONES

Amnon M. Cohen, Amersfoort, Netherlands, assignor to Polak's Frutal Works, B.V., Amersfoort, Netherlands

Filed Feb. 21, 1978, Ser. No. 879,307
Claims priority, application United Kingdom, Mar. 31, 1977, 13636/77; Dec. 20, 1977, 52936/77
Int. Cl.[2] C07D 307/60
U.S. Cl. 260—347.8 9 Claims

1. A process for the preparation of 4-hydroxy-5-alkyl-3-oxo-2H-furans which comprises
(a) condensing a dialkyl-α-alkyl diglycolic acid ester with an oxalic acid diester in the presence of an alkaline condensing agent;
(b) hydrolyzing the carbalkoxy group of the resultant reaction product;
(c) decarboxylating the hydrolyzed product; and
(d) recovering 4-hydroxy-5-alkyl-3-oxo-2H-furan.

4,127,593

EPICHLOROHYDRIN PURIFICATION PROCESS

Leo Kim, and Sunny C. Tang, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 30, 1978, Ser. No. 873,312
Int. Cl.[2] C07D 301/32
U.S. Cl. 260—348.37 3 Claims

1. The process of removing 2,3-butanedione impurity from epichlorohydrin which comprises contacting said epichlorohydrin with a macroreticular poly(t-butyl acrylate) adsorbent resin having a pore volume between about 0.48 and about 0.57, an average pore diameter between about 80 and about 100 angstroms and a surface area between about 400 to about 500 square meters per gram.

4,127,594

SELECTIVE HYDROGENATION OF OLEFINIC IMPURITIES IN EPICHLOROHYDRIN

Elmer A. Anderson; Leo Kim, and Sunny C. Tang, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 21, 1978, Ser. No. 879,302
Int. Cl.[2] C07D 301/32
U.S. Cl. 260—348.37 7 Claims

1. A process for selectively removing minor amounts of beta-chloroacroleins and 5,6-epoxyhexene-1 from a mixture made up predominantly of epichlorohydrin which comprises treating said mixture with hydrogen at a temperature of between about 20° C. and about 150° C. in the presence of a supported catalyst comprising a metal selected from the class consisting of rhodium, platinum and palladium deposited on a non-acidic, refractory support, said metal being present at a concentration ranging from about 0.05 to about 10% by weight of the supported catalyst.

4,127,595

PROCESS FOR PRODUCING BENZANTHRONE

Ryo Matsuura, Yamato; Shuichi Nakatani; Kazuya Nagaoka, both of Yokohama; Kouji Kusabe, Kawasaki, and Mikio Kaseda, Yokohama, all of Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 845,379
Claims priority, application Japan, Nov. 17, 1976, 51-137974
Int. Cl.[2] C07C 49/70; C09B 3/02
U.S. Cl. 260—352 10 Claims

1. A process for producing benzanthrone which comprises reacting a hydroanthraquinone having 1,4-dihydro ring with acrolein or an acrolein precursor in the presence of a dehydration catalyst.

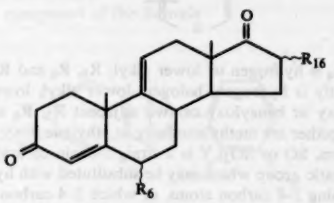
4,127,596

NON-AROMATIC OXYGENATED STRONG ACID DEHYDRATION OF 9α-HYDROXYANDROSTENEDIONES

John M. Beaton, Portage; Joel E. Huber, Texas Township, Kalamazoo County; Amphlett G. Padilla, and Max E. Breuer, both of Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 11, 1977, Ser. No. 786,127
Int. Cl.[2] C07J 1/00
U.S. Cl. 260—397.3 25 Claims

1. A process for the preparation of a steroid of the formula:



II

where R_6 is a hydrogen or fluorine atom, or a methyl group; R_{16} is a hydrogen atom or methyl group and where ~ indicates that the attachment of the R_6 and R_{16} groups are in the α or β configuration which comprises reacting a 9α-hydroxy steroid of the formula:

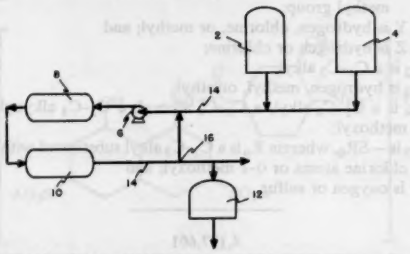
I

where R_6, R_{16}, and ~ are defined above with a non-aromatic oxygenated acid with a pK_a of less than or equal to 1.0.

4,127,597
CONTINUOUS FRACTIONATION OF TALLOW AND PRODUCTION OF A COCOA BUTTER-LIKE PLASTIC FAT

James C. Craig, Jr., Maple Glen; Michael F. Kozempel, Warminster, and Stanley Elias, Elkins Park, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 14, 1977, Ser. No. 787,660
Int. Cl.[2] C11B 7/00, 3/00
U.S. Cl. 260—428.5 4 Claims



1. A process for fractionating tallow into three distinct fractions, a hard, high-melting solid fraction, a plastic solid having physical and thermal properties similar to those of cocoa butter, and a liquid oil fraction, comprising;

(a) dissolving the tallow in a suitable solvent, the ratio of solvent to tallow being sufficient to solubilize the tallow and to effect a fractionation at a crystallizable ratio of solute concentration and temperature;

(b) feeding, continuously, the solution to one or more crystallizers;

(c) circulating the solution through the crystallizers at a first preselected steady state crystallization temperature range;

(d) limiting the nominal residence time of said solution in the crystallizers at said first steady state crystallization temperature to a maximum of ten minutes;

(e) crystallizing out a hard, high-melting solid thereby forming a circulating crystallized stream;

(f) withdrawing continuously part of said crystallized stream at said first preselected steady state crystallization temperature to obtain crystallized hard, high-melting solid and filtrate;

(g) recirculating, continuously, at said first preselected steady state crystallization temperature, the crystallized stream not withdrawn in step (f) together with aforesaid continuously fed solubilized tallow;

(h) repeating steps (f) and (g) until all of the solublized tallow is fed to the crystallizers and all of said crystallized stream is withdrawn from the crystallizers;

(i) circulating the filtrate from the aforesaid first crystallization through said crystallizers at a second preselected steady state crystallization temperature range;

(j) limiting the nominal residence time of said filtrate solution in the crystallizers at the steady state crystallization temperature to a maximum of 10 minutes;

(k) crystallizing out a plastic solid having physical and thermal properties similar to those of cocoa butter thereby forming a circulating crystallized stream;

(l) withdrawing continuously part of said crystallized stream at said second preselected steady state crystallization temperature to obtain crystallized plastic solid and filtrate;

(m) recirculating, continuously, at said second preselected steady state crystallization temperature, the crystallized stream not withdrawn in step (l);

(n) repeating steps (l) and (m) until all of said crystallized stream is withdrawn from the crystallizers; and

(o) removing the solvent from the filtrate from the aforesaid second crystallization to obtain a liquid oil fraction.

2. A process for fractionating tallow into three distinct fractions, a hard, high-melting solid fraction, a plastic solid having physical and thermal properties similar to those of cocoa butter, and a liquid oil fraction, comprising;

(a) dissolving the tallow in a suitable solvent, the ratio of solvent to tallow being sufficient to solubilize the tallow and to effect a fractionation at a crystallizable ratio of solute concentration and temperature;

(b) feeding, continuously, the solution to one or more crystallizers;

(c) circulating the solution through the crystallizers at a first preselected steady state crystallization temperature range;

(d) limiting the nominal residence time of said solution in the crystallizers at said first steady state crystallization temperature to a maximum of 10 minutes;

(e) crystallizing out a precipitate, said precipitate being a combination of the hard, high-melting solid fraction and the plastic solid fraction thereby forming a circulating crystallized stream;

(f) withdrawing, continuously, part of said crystallized stream at said first preselected steady state crystallization temperature to obtain said combination of crystallized fractions and filtrate.

(g) recirculating, continuously, at said first preselected steady state crystallization temperature the crystallized stream not withdrawn in step (f) together with aforesaid continuously fed solubilized tallow;

(h) repeating steps (f) and (g) until all of the solubilized tallow is fed to the crystallizers and all of said crystallized stream is withdrawn from the crystallizers;

(i) removing the solvent from the filtrate of the aforesaid precipitate to obtain the liquid oil fraction;

(j) redissolving the aforesaid precipitate in a suitable solvent, the ratio of solvent to tallow being sufficient to solubilize the tallow and to effect a fractionation at a crystallizable ratio of solute concentration and temperature;

(k) feeding, continuously, the solution to one or more crystallizers;

(l) circulating the solution through the crystallizers at a second preselected steady state crystallization temperature range;

(m) limiting the nominal residence time of the solution in the crystallizers at said second steady state crystallization temperature to a maximum of ten minutes;

(n) crystallizing out a hard, high-melting solid fraction, thereby forming a circulating crystallized stream;

(o) withdrawing continuously part of said crystallized stream at said second preselected steady state crystallization temperature to obtain crystallized hard, high melting solid and filtrate;

(p) recirculating, continuously, at said second preselected steady state crystallization temperature the crystallized stream not withdrawn in step (o);

(q) repeating steps (o) and (p) until all of said crystallized stream is withdrawn from the crystallizers; and

(r) removing the solvent from the filtrate of the solid fraction to obtain a plastic solid having physical and thermal properties similar to those of cocoa butter.

4,127,598
PROCESS FOR REMOVING BIPHENYLS FROM CHLOROSILANES

Harry R. McEntee, 16 Clemente La., Waterford, N.Y. 12188

Continuation-in-part of Ser. No. 770,329, Feb. 22, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,367
Int. Cl.[2] C07F 7/20
U.S. Cl. 260—448.2 E 20 Claims

1. A process for removing biphenyls from impure silanes and siloxanes comprising (1) passing a first stream of impure silanes and siloxanes containing biphenyls into contact with an adsorbent bed selected from the class consisting of molecular sieves and charcoal and (2) adsorbing the biphenyls from said first stream of silanes and siloxanes on said adsorbent bed, and (3) removing a second stream of purified silanes and siloxanes

from said adsorbent bed containing a smaller amount of biphenyls than said first stream.

4,127,599

PROCESS FOR THE PREPARATION OF POLYISOCYANATES HAVING BIURET GROUPS

Edgar Möhring, Bergisch Gladbach; Kuno Wagner, and Hanns P. Müller, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 22, 1977, Ser. No. 789,902

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619548

Int. Cl.² C07C *127/24*

U.S. Cl. 260—453 AB **7 Claims**

1. Process for the preparation of polyisocyanates having biuret groups comprising reacting excess quantities of organic polyisocyanates of the formula $Q(NCO)_2$ wherein Q represents a aliphatic hydrocarbon group having from 4 to 12 carbon atoms or a cycloaliphatic hydrocarbon group having from 4 to 15 carbon atoms with a mixture of water and diprimary diamines of the formula $R'(NH_2)_2$ wherein R' represents an aliphatic hydrocarbon group having 2 to 12 carbon atoms, a cycloaliphatic hydrocarbon group having 4 to 17 carbon atoms, or an araliphatic hydrocarbon group having 8 to 10 carbon atoms.

4,127,600

HERBICIDAL THIOLCARBAMATES

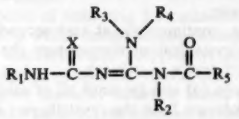
Julius J. Fuchs, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 732,282, Oct. 13, 1976, which is a division of Ser. No. 520,114, Nov. 1, 1976, Pat. No. 4,004,915, which is a division of Ser. No. 356,422, May 2, 1973, Pat. No. 3,882,160, which is a continuation-in-part of Ser. No. 312,904, Dec. 7, 1972, Pat. No. 3,823,179. This application Apr. 17, 1978, Ser. No. 897,011

Int. Cl.² C07C *153/09*

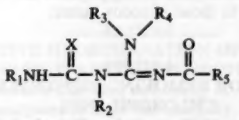
U.S. Cl. 260—455 A **1 Claim**

1. A compound having one of the following formulas



(1)

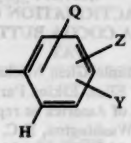
and



(2)

wherein

R_1 is selected from a C_2–C_8 alkyl substituted with 0–1 methoxy, ethoxy, methylthio, or ethylthio group; a C_3–C_6 alkenyl; a C_3–C_6 alkynyl; a C_4–C_8 cycloalkyl substituted with 0–1 C_2–C_4 alkyl, 0–2 methyl groups, 0–2 chlorine or bromine atoms, or 0–1 methoxy or ethoxy group; a C_5–C_8 cycloalkenyl; a C_4–C_8 cycloalkylmethyl or cycloalkenylmethyl; a C_7–C_{10} bicycloalkyl or bicycloalkenyl; a C_8–C_{11} bicycloalkylmethyl or bicycloalkenylmethyl; trimethylcyclohexyl; tetramethylcyclohexyl; and



wherein

Q is hydrogen, fluorine, chlorine, bromine, a C_1–C_4 alkyl, a C_1–C_2 alkoxy or alkylthio group, nitro or trifluoromethyl group;

Y is hydrogen, chlorine, or methyl; and

Z is hydrogen or chlorine;

R_2 is a C_1–C_3 alkyl;

R_3 is hydrogen, methyl, or ethyl;

R_4 is a C_1–C_4 alkyl, a C_3–C_4 alkenyl, a C_3–C_4 alkynyl, or methoxyl;

R_5 is $—SR_6$, wherein R_6 is a C_1–C_8 alkyl substituted with 0–3 chlorine atoms or 0–1 methoxyl; and

X is oxygen or sulfur.

4,127,601

α-SUBSTITUTED VINYL MENTHYL CARBONATES

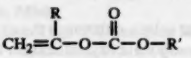
Harvey J. Grubbs, Mechanicsville; Thomas V. Van Auken, and William R. Johnson, Jr., both of Richmond, all of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Division of Ser. No. 624,900, Oct. 22, 1975, abandoned. This application Oct. 8, 1976, Ser. No. 730,951

Int. Cl.² C07C *69/96*

U.S. Cl. 260—463 **7 Claims**

1. A chemical compound corresponding to the formula:



wherein R is a member selected from the group consisting of aliphatic, alicyclic and aromatic radicals containing between 1 and about 10 carbon atoms and composed of elements selected from carbon, hydrogen and oxygen, and R' is the menth-1-yl radical.

4,127,602

METHYL SUBSTITUTED HYDROXYNAPHTHALENESULFONIC ACID UREIDES AND SALTS AS COMPLEMENT INHIBITORS

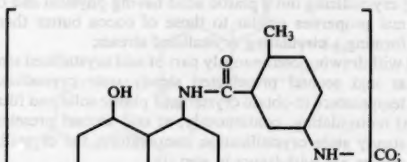
Seymour Bernstein, New City, N.Y.; Robert H. Lenhard, Paramus, N.J., and Milton D. Heller, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 684,598, May 10, 1976, Pat. No. 4,046,805. This application Mar. 25, 1977, Ser. No. 781,236

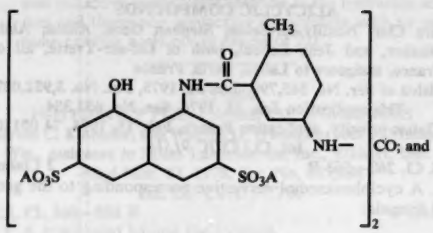
Int. Cl.² C07C *143/30*; A61K *31/185*

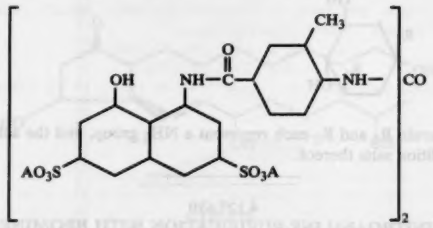
U.S. Cl. 260—506 **4 Claims**

1. A methyl substituted-hydroxynaphthalenesulfonic acid and salt selected from those of the formula:



-continued





wherein A is hydrogen, alkali metal and alkaline earth, with the proviso that each A is identical in the same compound.

4,127,603

METHOD OF PREPARING METHACRYLIC ACID

Erna A. Bljumberg, Leninsky prospekt, 57, kv. 10, Moscow; Gennady F. Vytnov, ulitsa Uritskogo, 10a, kv. 29, Dzerzhinsk Gorkovskoi oblasti; Oleg V. Isaev, ulitsa Parshina, 21, korpus 2, kv. 12, Moscow; Oleg V. Krylov, ulitsa Dm. Ulyanova, 4, korpus 2, kv. 371, Moscow; Sergei A. Maslov, Veshnyakovskaya ulitsa, 6, korpus 4, kv. 56, Moscow; Liia Y. Margolis, ulitsa Dm. Ulyanova, 1/61, kv. 186, Moscow; Alexandr P. Sineokov, ulitsa Tsiolkovskogo, 49a, kv. 121 Dzerzhinsk Gorkovskoi oblasti; Evgeny S. Smirnov, Leninsky prospekt, 83, kv. 366, Moscow; Levon A. Tavadian, ulitsa Charentsa, 4, kv. 43, Erevan; Nikolai M. Emanuel, Vorobievskoe shosse, 2b, kv. 44, Moscow; Kapitalina I. Grobova, Moskovskoe shosse, 15, kv. 85, Gorky, and Valentina V. Krylova, ulitsa Uritskogo, 8a, kv. 29, Dzerzhinsk Gorkovskoi oblasti, all of U.S.S.R.

Filed Feb. 16, 1977, Ser. No. 769,117

Claims priority, application U.S.S.R., Feb. 20, 1976, 2325546

Int. Cl.² C07C *51/32*

U.S. Cl. 562—533 **7 Claims**

1. A method of preparing methacrylic acid, comprising liquid-phase oxidation of alpha-methylacrolein with an oxygen-containing gas in a medium of an organic solvent at a temperature ranging from 50° to 100° C and under a pressure of 1 to 50 atm in the presence of a heterogeneous catalyst selected from the group consisting of borides, nitrides, and carbides of elements selected from the group consisting of aluminum and elements of Groups IVB–VB of the periodic system, in the presence of a polymerization inhibitor, followed by separation of the desired product from the reaction mixture resulting from the oxidation.

4,127,604

PROCESS FOR THE PREPARATION OF ACETIC ACID DERIVATIVES

Michel Chignac, Sisteron; Claude Grain, Volonne, and Charles Pigerol, Saint-Ouen, all of France, assignors to Labaz, Paris, France

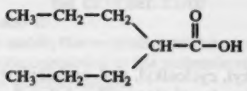
Filed May 25, 1977, Ser. No. 800,344

Claims priority, application France, Mar. 15, 1977, 77 07588

Int. Cl.² C07C *51/06, 51/52*

U.S. Cl. 562—606 **16 Claims**

1. Process for the preparation of di-n-propyl acetic acid of formula:



and its non-toxic alkali and alkaline earth metal salts whereby, in a single stage, sodium n-propylate in n-propanol medium is added to a reaction medium formed of a cyanacetic ester of general formula:

in which R represents an alkyl radical having from 1 to 4 carbon atoms, and n-propyl bromide or iodide, the alkylation reaction taking place under reflux, the crude ester obtained is saponified with a 10 to 20% solution of sodium or potassium hydroxide, the salt thus obtained is acidified with a strong acid, to give the crude di-n-propyl cyanacetic acid, which is decarboxylated by heating at a temperature between 140° and 190° C., to provide the di-n-propyl acetonitrile, the di-n-propyl acetonitrile obtained is hydrolysed by means of an aqueous solution of 75 to 80% sulphuric acid at a temperature of 80–140° C. to give the crude di-n-propyl acetamide, which is hydrolysed by means of an aqueous solution of 75–80% sulphuric acid at a temperature of 40°–80° C. in the presence of sodium nitrite, to provide di-n-propyl acetic acid, which is caused to react, optionally, with an alkali metal hydroxide or alkaline earth metal oxide in order to obtain the corresponding salt.

4,127,605

SUBSTITUTED CARBAMATE INTERMEDIATE

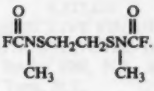
James V. Hay, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 24, 1978, Ser. No. 899,299

Int. Cl.² C07C *125/03*

U.S. Cl. 260—544 C **1 Claim**

1. A compound of the formula



4,127,606

SUBSTITUTED SULFONAMIDES HAVING ANTIINFLAMMATORY ACTIVITY

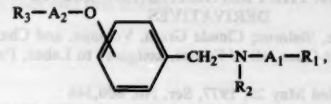
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 736,990, Oct. 29, 1976, Pat. No. 4,064,125. This application Sep. 19, 1977, Ser. No. 834,216

Int. Cl.² A61K *31/18, 31/185*

U.S. Cl. 260—556 A **8 Claims**

1. A compound having the formula:



or a pharmaceutically acceptable salt thereof, wherein R_1 is alkyl, cycloalkyl or aryl; R_2 is

wherein Y is alkyl, cycloalkyl, aryl, arylalkyl, styryl or styryl substituted in the phenyl ring with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group; R_3 is alkylamino or dialkylamino; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; and wherein aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro, or amino group; alkyl and alkoxy are groups having 1 to 6 carbon atoms; and cycloalkyl is a group having 3 to 7 carbon atoms.

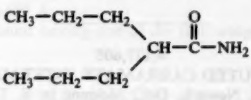
4,127,607

PROCESS FOR THE PREPARATION OF AN ACETAMIDE DERIVATIVE

Michel Chignac, Sisteron; Claude Grain, Volonne, and Charles Pigerol, Saint-Ouen, all of France, assignors to Labaz, Paris, France

Filed May 25, 1977, Ser. No. 800,345
Claims priority, application France, Mar. 15, 1977, 77 07586
Int. Cl.[2] C07C *103/127*
U.S. Cl. 260—561 R **2 Claims**

1. In a process for preparing di-n-propyl acetamide of the formula:



by hydrolysis of di-n-propyl acetonitrile, the improvement whereby di-n-propyl acetonitrile is hydrolysed by means of an 80% sulphuric acid aqueous solution in the proportion of 2.5 grams of said acid per gram of nitrile, at a temperature between 80° C. and 85° C. to produce the desired amide.

4,127,608

SYNTHESIS OF VITAMIN E

Gary L. Olson, Union County, and Gabriel Saucy, Essex County, both of N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 17, 1977, Ser. No. 797,713
Int. Cl.[2] C07C *87/30*
U.S. Cl. 260—567.6 P **2 Claims**

1. A compound selected from the group consisting of bis[-tri(n-decyl)monomethyl ammonium]nitrosodisulfonate, bis[-tri(n-octyl)monomethylammonium]nitrosodisulfonate and mixtures thereof.

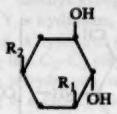
4,127,609

ALICYCLIC COMPOUNDS

Andre Cler, Neuilly-sur-Seine; Stephan Gero, Ablon; Alain Olesker, and Jean Leboul, both of Gif-sur-Yvette, all of France, assignors to Labaz, Paris, France

Division of Ser. No. 545,799, Jan. 31, 1975, Pat. No. 3,952,027. This application Jan. 22, 1976, Ser. No. 651,354
Claims priority, application France, Feb. 15, 1974, 74 05110
Int. Cl.[2] C07C *91/14*
U.S. Cl. 260—563 R **3 Claims**

1. A cyclohexanediol derivative corresponding to the general formula:



I

wherein R_1 and R_2 each represent a NH_2 group, and the acid addition salts thereof.

4,127,610

DINITROANILINE PURIFICATION WITH BROMINE AND CHLORINE

Richard F. Eizember, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 825,345, Aug. 17, 1977. This application Feb. 17, 1978, Ser. No. 878,835
Int. Cl.[2] C07C *85/26*
U.S. Cl. 260—582 **21 Claims**

1. The process which comprises contacting a nitrosamine-containing dinitroaniline selected from the group consisting of
trifluralin,
isopropalin,
benefin,
butralin,
tendimethalin,
fluchloralin,
profluralin,
dinitramine,
4-trifluoromethyl-2,6-dinitro-3-chloro-N,N-diethylaniline,
4-methyl-2,6-dinitro-N,N-bis(2-chloroethyl)aniline,
oryzalin, and
nitralin,
(1) in liquid phase,
(2) with a reagent selected from the group consisting of molecular bromine, molecular chlorine, N-bromosuccinimide, N-chlorosuccinimide, bromine chloride, pyridine perbromide, and pyridinium bromide perbromide, until the concentration of the nitrosamine has been reduced.

4,127,611

PROCESS FOR THE REDUCTIVE METHYLATION OF AN ACID HYDRAZIDE

Robert J. Small, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Oct. 11, 1977, Ser. No. 840,538
Int. Cl.[2] C07C *85/00*
U.S. Cl. 260—583 B **1 Claim**

1. In a process for the reductive methylation of acethydrazide wherein a solution of said hydrazide prepared by condensing hydrazine or an aqueous solution thereof with a stoichiometrical excess of ethyl acetate is reacted with formaldehyde in the presence of hydrogen and palladium or platinum catalyst supported on carbon; the improvement of pretreating the resultant hydrazide solution to effect removal of residual catalyst poisoning amounts of hydrazine which alternatively consists of either:
(a) contacting the hydrazide solution with carbon dioxide until the solution exhibits a pH not in excess of 7.0; or

(b) charging the requisite amount of catalyst for effecting said reductive methylation reaction to the hydrazide solution and thereupon contacting the solution with air until same exhibits a pH not in excess of 7.0.

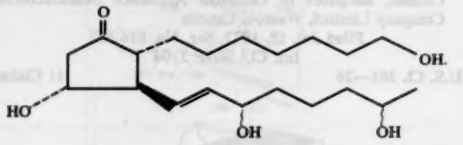
4,127,612

19-HYDROXY PGE$_1$ CARBINOL ANALOGUES

Harold C. Kluender, and Warren D. Woessner, both of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 17, 1978, Ser. No. 887,666
Int. Cl.[2] C07C *177/00*
U.S. Cl. 260—586 R 3 Claims

1. A compound having the formula,



4,127,613

STABILIZATION OF METHYL TRIFLUOROVINYL ETHER

Gerald J. O'Neill, Arlington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 20, 1977, Ser. No. 843,988
Int. Cl.[2] C07C *41/12*
U.S. Cl. 568—581 10 Claims

1. Methyl trifluorovinyl ether stablized with respect to deflagration potential comprising methyl trifluorovinyl ether in admixture with one or more fluorohaloalkanes having a boiling point less than the boiling point of methyl trifluorovinyl ether.

4,127,614

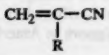
IMPACT-RESISTANT OLEFINIC-NITRILE OLEFINIC-ESTER COPOLYMERS PREPARED IN THE PRESENCE OF AN OLEFINIC-ESTER COPOLYMER ELASTOMER

June T. Duke, Chagrin Falls, and Dorothy C. Prem, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 361,170, May 17, 1973, abandoned. This application Jul. 28, 1976, Ser. No. 709,536
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—836 9 Claims

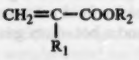
1. The polymer resulting from the polymerization of 100 parts by weight of

(A) at least 70% by weight of at least one nitrile monomer having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) up to 30% by weight based on the combined weights of (A) and (B) of an ester having the structure



wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms or an epoxy or oxirane group having from 2 to 6 carbon atoms in the presence of from 1 to 40 parts by weight of

(C) an elastomer selected from the group consisting of a copolymer of ethyl acrylate, styrene and glycidyl acrylate, and a copolymer of n-butyl acrylate, styrene and glycidyl acrylate.

4,127,615

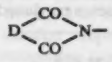
EPOXIDE RESIN MIXTURES

Abdul-Cader Zahir, Oberwil, and Alfred Renner, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,498
Claims priority, application Switzerland, Jun. 17, 1976, 7746/76
Int. Cl.[2] C08L *63/00*
U.S. Cl. 260—837 R 17 Claims

1. A storage-stable, thermosetting mixture which comprises:

(a) a polyimide containing in the molecule at least two radicals of the general formula



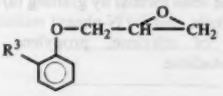
(I)

wherein D represents a bivalent radical containing a carbon-carbon double bond;

(b) 0.1 to 10 moles of an akenylphenol, an alkenylphenol ether or mixtures thereof per equivalent of said polyimide;

(c) 0.1 to 10 moles per equivalent of said polyimides of an epoxide compound of a mixture of several epoxide compounds selected from the group consisting of:

(α) glycidyl ethers of the formula



(II)

wherein R_3 represents an allyl group or H atom,

(β) glycidyl ethers of novolaks (X') which contain two or more epoxy groups of said glycidyl ethers additionally substituted on the aromatic nuclei with one or more allyl groups,

(α) polyepoxy adducts (Y'), having two or more epoxy groups per molecule, produced by an advancement reaction of one or more diepoxide compounds with one or more bisphenols or said diepoxide compounds or bisphenols additionally substituted on the aromatic nuclei with one or more allyl groups,

(δ) epoxide compounds (Z') produced by the reaction of one or more phenols or said phenols, additionally substituted on the aromatic nuclei with one or more allyl groups, with epichlorohydrin in an alkaline solution, and

(d) up to 5 percent by weight, relative to the epoxide resin, of a curing accelerator for epoxide resins.

4,127,616

PROCESS FOR SELECTIVE PRODUCTION OF PARA DIALKYL SUBSTITUTED BENZENES

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 726,091, Sep. 23, 1976, Pat. No. 4,090,981. This application Jan. 16, 1978, Ser. No. 869,732
Int. Cl.[2] C07C *3/52, 3/62*
U.S. Cl. 260—671 R 14 Claims

1. A process for the selective production of para dialkyl substituted benzenes wherein the alkyl group contains from 1 to 4 carbon atoms which comprises contacting, under conversion conditions, a hydrocarbon precursor selected from the group consisting of mono alkyl-substituted benzenes having 1–4 carbon atoms in the alkyl substituent and a mixture of said precursor or benzene with an alkylating agent containing from 1 to 4 carbon atoms with a catalyst comprising a porous crys-

talline aluminosilicate zeolite having deposited thereon a coating of silica which extensively covers and resides substantially exclusively on the external surface thereof as a result of contact with a silicone compound of a molecular size incapable of entering the pores of the zeolite and subsequent heating in an oxygen-containing atmosphere to a temperature in excess of 300° C. but below a temperature at which crystallinity of the zeolite is adversely affected at a rate such that the silicone compound does not volatilize prior to undergoing oxidation to silica, said zeolite being characterized by an activity, in terms of alpha value, of between about 2 and about 5000, a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho xylene sorption time for 30 percent of said capacity greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a pressure of 4.5 ± 0.8 mm. of mercury and recovering from the resulting product mixture, a para dialkyl substituted benzene in an amount greater than the thermodynamic equilibrium concentration thereof in the total dialkyl substituted benzenes produced.

4,127,617

SHOCK-RESISTANT RESIN AND METHOD FOR THEIR PREPARATION

Sergio Arrighetti, Milan; Aldo Brancaccio, Cremona; Sebastiano Cesca, and Giampaolo Guiliani, both of San Donato Milanese (Milan), all of Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Sep. 20, 1976, Ser. No. 724,602
Claims priority, application Italy, Oct. 3, 1975, 27951 A/75
Int. Cl.² C08F *255/06*
U.S. Cl. 260—878 R **5 Claims**

1. A shock resistant resin formed by grafting (a) a mixture of styrene and acrylonitrile, and (b) N-phenyl maleic imide onto (c) a terpolymer of ethylene, propylene and 1-isopropylidenedyclopentadiene.

4,127,618

MODIFIED VINYL CHLORIDE POLYMERS

Thomas H. Sutherland, Sarnia, and Peter A. C. Smith, Petrolia, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 585,967, Jun. 11, 1975, which is a continuation of Ser. No. 403,783, Oct. 5, 1973, Pat. No. 3,862,943, which is a continuation-in-part of Ser. No. 203,029, Nov. 29, 1971, which is a continuation-in-part of Ser. No. 102,939, Dec. 30, 1970, abandoned. This application Jan. 28, 1977, Ser. No. 763,648
Int. Cl.² C08F *279/00, 279/02*
U.S. Cl. 260—879 **10 Claims**

1. In a water base suspension polymerization process for preparing an improved impact-resistant vinyl chloride polymer, the improvement which consists essentially of adding a monomer comprising at least about 65% vinyl chloride to a reaction zone containing about 0.1 to about 50 parts by weight per 100 parts of said monomer of uncured butyl rubber having a viscosity average molecular weight of 100,000 to 1,200,000 and thereafter introducing a polymerization initiator and polymerizing, whereby there is obtained polymer blend comprising uncured butyl rubber, vinyl chloride polymer and uncured butyl rubber having grafted thereon vinyl chloride polymer.

4,127,619

POLYETHYLENE CONTAINING HOT MELT ADHESIVES

Darryl A. Godfrey, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1977, Ser. No. 822,186
Int. Cl.² C08L *9/00*
U.S. Cl. 260—889 **8 Claims**

1. An adhesive composition capable of being used as a hot melt adhesive comprising a blend of

(a) about 50 to 80 percent by weight of at least one polyethylene having a melt viscosity of 500 to 20,000 centipoise at 190° C. and a density greater than 0.90 to about 0.97 g/cc.,

(b) about 13 to 35 percent by weight of at least one tackifier resin selected from the group consisting of hydrocarbon resin and polyterpene resin, and

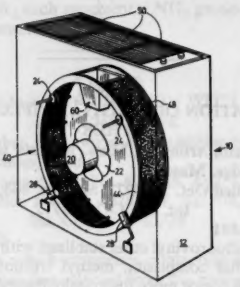
(c) about 7 to 15 percent by weight of a high density, low viscosity polyethylene wax having a molecular weight of about 800 to 1200 and a Ring and Ball softening point in the range of 110° to 120° C.

4,127,620

INTEGRAL WATER FILL SYSTEM FOR HUMIDIFIERS

John A. Sherman, and Peter S. Wardell, both of Orangeville, Canada, assignors to Canadian Appliance Manufacturing Company Limited, Weston, Canada

Filed Jul. 18, 1977, Ser. No. 816,367
Int. Cl.² B01F *3/04*
U.S. Cl. 261—26 **11 Claims**



1. In a portable air humidifier comprising a drum having a skeletal frame periphery, a belt of air permeable, water absorbent material generally covering said periphery, a water reservoir, said drum being mounted for rotation with peripheral portions thereof within said reservoir, the improvement wherein a major portion of said periphery is covered by said belt, the remaining minor portion of said periphery defining an opening to the interior of said drum, and wherein a funnel means is provided having wall structure defining the mouth opening of said funnel and a discharge spout therefor, said funnel means being generally secured to said drum with said mouth opening coincident with said opening and said spout directed towards the interior of said drum whereby replenishing water may be added to said reservoir.

4,127,621

QUENCHING DEVICE

Albert H. Berst; Richard L. Kline; William A. Medcalf; James H. Onnen, all of Louisville, and Philipp P. Schupp, La Grange, all of Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 4, 1977, Ser. No. 821,728
Int. Cl.² B01D *47/06*
U.S. Cl. 261—118 **3 Claims**

1. A quenching device for a hot, dirty gas stream comprising:

a housing having a gas inlet and a gas outlet;

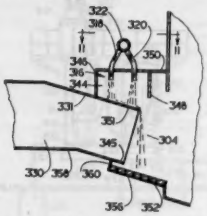
a flow-through duct in fluid communication with said gas inlet at one end and a hot, dirty gas source at the opposed end;

a transversely disposed cooling water source means mounted generally above said flow-through duct, said cooling water source means including means to provide a water curtain of uniform density across the quenching device;

said housing including a lower wall disposed beneath and connected to a lower wall of said duct with a vertically

extending baffle therebetween, the lower wall of said housing communicating with said gas inlet; and,

a chamber portion within said housing, said chamber portion surrounding said cooling water source means, said cooling water source means including vertically extending spray means, said chamber having vertically extending sides terminating at a lower extremity a preselected distance below the lower extremity of said spray means, said chamber portion being provided with a bottom wall connecting with one of the vertically extending sides and top wall of said duct; the bottom wall of said chamber portion extending angularly in a downwardly direction whereby water from said cooling water source means is directed onto the upper surface of said chamber bottom wall to flow in a curtain across the outlet from said duct in the quenching device.

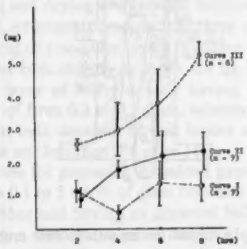


4,127,622

PROCESS FOR THE PREPARATION OF HOLLOW PARTICULATES

Sumio Watanabe; Yasuhiko Mizuno; Masanori Kayano, all of Honjo, and Yoshio Ishino, Kumagaya, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1975, Ser. No. 615,086
Claims priority, application Japan, Sep. 19, 1974, 49-107111
Int. Cl.[2] B01J *2/02*
U.S. Cl. 264—13 **17 Claims**



1. A process for preparing spherical, hollow particulates, which comprises dissolving ethylcellulose in a solvent selected from the group consisting of a lower chlorinated hydrocarbon, a mixture of a lower chlorinated hydrocarbon and a lower chlorofluorinated hydrocarbon, a mixture of a lower chlorinated hydrocarbon, a lower chlorofluorinated hydrocarbon and water, and a mixture of a lower chlorinated hydrocarbon and water, to form a solution having a concentration of ethylcellulose of 0.5–4% by weight based on the total weight of the solution, and spray-drying the solution by introducing said solution into a spray dryer at an inlet temperature for the spray dryer of higher than 50° C., to obtain spherical, hollow particulates having a diameter of about 10–200 μ, an internal space volume ratio of greater than about 50%, and an apparent density of less than about 0.7.

4,127,623

PROCESS FOR PRODUCING POLYOLEFIN SHORT FIBERS

Shunsuke Matsushima, Ibaraki, and Kiyoshi Kawai, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 598,638, Jul. 24, 1975, abandoned. This application Nov. 19, 1976, Ser. No. 743,419
Claims priority, application Japan, Aug. 3, 1974, 49-89149
Int. Cl.[2] D21F *11/00*
U.S. Cl. 264—13 **9 Claims**

1. A process for producing poly-α-olefin short fibers, which consists essentially of

further increasing the pressure of a solution mixture of two liquid phases comprising a fiber-forming crystalline poly-α-olefin and a solvent selected from the group consisting of a paraffinic and naphthenic hydrocarbon, aromatic hydrocarbon, chloroparaffin, and a mixture thereof and having said poly-α-olefinconcentration of from 5 to 20%, at temperature of from 140° to 250° C. and higher than the lower critical solution temperature of said solution mixture under its autogenous pressure in the range of 5 to 25 kg/cm^2 (gage pressure), to 50 kg/cm^2 (gage pressure) or higher, and immediately thereafter

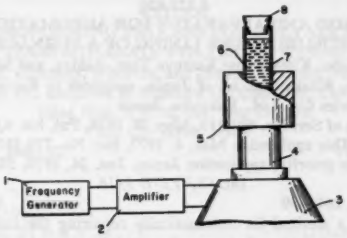
ejecting the solution mixture under pressure through a nozzle or orifice to a low pressure zone, wherein the time elapsed between completion of the increase of the pressure and the ejection is 0.5 minute or less.

4,127,624

PROCESS FOR PRODUCING NOVEL POLYMERIC FIBERS AND FIBER MASSES

Leon B. Keller, Palos Verdes Estates, and Robert K. Jenkins, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 616,747, Sep. 9, 1975, abandoned, which is a continuation of Ser. No. 481,412, Jun. 20, 1974, abandoned. This application May 2, 1977, Ser. No. 792,838
Int. Cl.[2] B06B *3/00*
U.S. Cl. 264—23 **13 Claims**



1. A process for the production of a three-dimensional polymeric fiber mass formed of crystalline, branched polymeric fibers and fiber bundles randomly arranged in all directions to define a coherent mass having isotropic properties comprising dissolving a fiber-forming polymeric material in a solvent, and cooling resultant solution while subjecting said solution to the application of sonic vibrations.

4,127,625

PROCESS FOR PREPARING HOLLOW FIBER HAVING SELECTIVE GAS PERMEABILITY

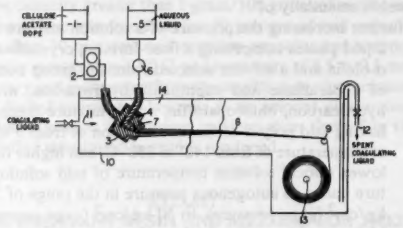
Katsuharu Arisaka; Kazu Watanabe, and Kunihiko Sasazima, all of Sakai, Japan, assignors to Daicel Ltd., Sakai, Japan

Continuation-in-part of Ser. No. 725,509, Sep. 22, 1976, abandoned. This application Jan. 17, 1977, Ser. No. 760,225

Claims priority, application Japan, Mar. 27, 1975, 50-37295; Oct. 31, 1975, 50-131984; Jan. 23, 1976, 51-6860

Int. Cl.[2] B05B *3/00*; B29D *27/00*

U.S. Cl. 264—28 **8 Claims**



1. A process for preparing a hollow, asymmetric, gas-separating fiber which comprises extruding through the annular space between the inner and outer tubes of a double tube spinneret, a solution containing from about 22 to about 33 percent by weight of a fiber-forming cellulose ester or a fiber-forming cellulose ether dissolved in an organic solvent and having a viscosity of from about 300 to about 1500 poise at a temperature of 20° C. and simultaneously extruding through the inner tube of said spinneret water containing dissolved therein from one to 20 weight percent of a water-soluble salt, said spinneret being submerged in an aqueous coagulating liquid bath having a temperature of from 0° to 30° C. whereby to coagulate said solution directly in said bath to produce a hollow fiber; maintaining the fiber in said coagulating bath for at least about 20 minutes; then removing the fiber from said coagulating bath and then, without permitting said fiber to dry, immersing it in water having a temperature of 50° to 100° C. for at least 3 minutes; then removing free water present on the exterior and interior surfaces of said fiber; then applying to the fiber a liquid coolant having a temperature of below minus 40° C. to freeze the fiber, said coolant being a non-solvent for said cellulose ether or said cellulose ester and being immiscible with water; and then vacuum drying the fiber under a pressure of less than 0.5 mmHg absolute, for more than 12 hours at a temperature of below minus 30° C.

4,127,626

METHOD AND APPARATUS FOR AUTOMATICALLY REPAIRING THE LINING OF A FURNACE

Sueki Kubo, Kitakyushu; Katsuya Toso, Ashiya, and Masayuki Fujita, Kitakyushu, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

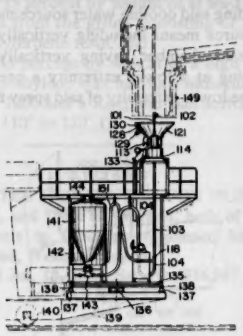
Division of Ser. No. 691,111, May 28, 1976, Pat. No. 4,085,894. This application Mar. 4, 1977, Ser. No. 774,310

Claims priority, application Japan, Jun. 24, 1975, 50/79104

Int. Cl.[2] F27D *1/16*

U.S. Cl. 264—30 **8 Claims**

1. In a method for automatically repairing the lining of a furnace comprising the steps of providing a movable transport car on which a vertically disposed spray pipe is capable of being vertically displaced along its longitudinal axis and of being rotated about its longitudinal axis, moving said transport car to a position underlying a furnace, elevating said spray pipe through an opening in the furnace into said furnace to thereby dispose a spray nozzle on the end of said spray pipe within said furnace by remote control, directing said spray nozzle to spray refractory material onto the abraded, eroded and spalled areas of the refractory lining within said furnace, and automatically directing unadhered falling and other refractory material falling from said furnace opening directly into a recovery hopper underlying the furnace opening.



4,127,627

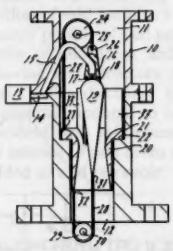
COUNTERBALANCED THROTTLE FOR I.C. ENGINE

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 807,099, Jun. 16, 1977. This application Sep. 2, 1977, Ser. No. 830,260

Int. Cl.[2] F02M *9/14*

U.S. Cl. 261—41 B **18 Claims**



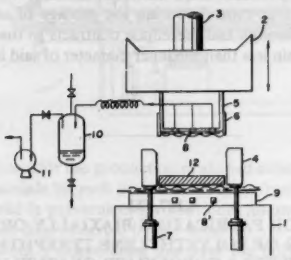
1. In a fuel supply means for an automobile engine, an inlet induction passage, a fuel supply port opening into said passage, said passage having an upstream inlet for receiving air and a downstream outlet for discharging a fuel-air mixture, throttle means in said passage downstream of said fuel supply port for controlling the axial flow of said mixture in said passage comprising a pair of throttle members movable axially of said passage and dimensioned to effect a variable restriction for said passage upon simultaneous movement of said members in axially opposite directions, said variable restriction comprising a variable geometry flow diffuser for conducting said flow therethrough at nearly sonic velocity at its region of minimum cross sectional area throughout the major operating range of said engine, and means for essentially balancing the force required to move either member in one axial direction against said flow by simultaneously moving the other member axially with said flow throughout the movement of said members.

4,127,628

MOLDED GYPSUM PRODUCT AND PROCESS FOR PREPARING THE SAME

Mitsuo Uchida, Machida; Takeshi Fushiki, Tokyo, and Mitsuru Awata, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,928
Claims priority, application Japan, Apr. 19, 1976, 51-44294
Int. Cl.[2] B29H *7/20*
U.S. Cl. 264—42 4 Claims



1. A process for preparing a molded gypsum product containing from 0.1 to 5 wt. % of glass fiber and from 1 to 9 wt.% of asbestos fiber and having an apparent bulk density of from 0.3 to 0.9 g/cc, which comprises the steps of

(1) mixing a hydraulic gypsum, water and reinforcing fibers of at least glass fiber and asbestos fiber to obtain a slurry,

(2) charging said slurry in a mold of a compression-molding machine,

(3) compression molding said slurry under a pressure of from 0.05 to 20 kg/cm^{2}G to remove the excess water from the upper and lower surfaces of the mold to form a molded product having a preselected weight ratio of water to hydraulic gypsum, and

(4) setting and drying said molded material to form a three-layered structure composed of three continuous layers consisting of two outer layers of higher density having an apparent bulk density of from 0.4 to 1.5 g/cc and one middle layer of lower density having an apparent bulk density of from 0.2 to 0.7 g/cc, wherein the difference in apparent bulk densities of said higher and lower density layers is not less than 0.1 g/cc.

3. A process for preparing a molded gypsum product containing from 0.1 to 5 wt.% of glass fiber and from 1 to 9 wt.% of asbestos fiber and having an apparent bulk density of from 0.3 to 0.9 g/cc, which comprises the steps of

(1) mixing a hydraulic gypsum, water and reinforcing fibers of at least glass fiber and asbestos fiber to obtain a slurry,

(2) charging said slurry in a mold of a compression-molding machine,

(3) compression molding said slurry under a pressure of 1–75 kg/cm^{2}G to remove water from either the upper surface or the lower surface of the mold to form a molded product having a preselected weight ratio of water to hydraulic gypsum, and

(4) setting and drying said molded material to form a two-layered structure composed of two continuous layers consisting of a higher density layer having an apparent bulk density of from 0.4 to 1g/cc and a lower density layer having an apparent bulk density of from 0.2 to 0.7g/cc, wherein the difference in apparent bulk densities of said higher and lower density layers is not less than 0.1g/cc.

4,127,629

PROCESS OF FORMING SILICON CARBIDE BODIES

Gerald Q. Weaver, Princeton, and John C. Logan, Auburn, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 599,386, Jul. 28, 1976, abandoned. This application Dec. 30, 1976, Ser. No. 755,947
Int. Cl.[2] C04B *35/56*
U.S. Cl. 264—63 4 Claims

1. A process for casting a complex silicon carbide shape which requires destruction of the mold to permit removal of the complex cast shape, said process including the steps of forming a castable aqueous slip from particles of finely powdered silicon carbide, said slip containing approximately 1 to 10% of a water miscible resin that will set or cure at a temperature below 200° C. to a structure that is relatively inert to an acid, casting said slip into a plaster mold which is attacked by said acid, heat treating the mold and cast slip to cure said resin and increase the green strength of the casting, decomposing the plaster mold by treating with said acid to facilitate removal of the mold from the strengthened casting, the curing step imparting substantial strength to the green casting so that the cured green casting is stronger than the acid treated mold, removing the decomposed mold to free the green casting and further firing the casting.

4,127,630

REACTION BONDED SILICON NITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 370,745, Jun. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 263,578, Jun. 18, 1972, abandoned. This application Dec. 3, 1975, Ser. No. 637,211
Int. Cl.[2] C04B *35/58*
U.S. Cl. 264—65 7 Claims

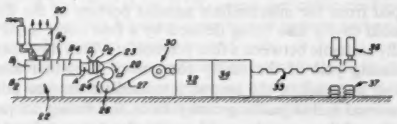
1. The process of forming a shaped body of silicon nitride having a transverse rupture strength in excess of 40,000 psi, which comprises the steps of compressing fine silicon powder to a green density of at least 1.45 grams/cc., the starting silicon powder having a generally uniform particle size and being essentially free of particles having a diameter greater than about 10 microns, sintering the compressed powder in an inert atmosphere essentially free of nitrogen, carbon, and oxygen, to form an interlocking silicon structure having silicon to silicon bonds between the fine particles, the maximum cross-sectional dimensions in the interlocking silicon structure being on the order of a few microns, and thereafter firing the silicon structure in a nitrogen containing atmosphere to convert the structure into a continuous silicon nitride body having essentially no pores greater than 15 microns a portion of the nitriding step being above the sintering temperature.

4,127,631

THERMOFORMING PROCESS FOR POLYALKYLENE TEREPHTHALATE POLYESTER RESINS

Robert E. Dempsey, Wheaton, and James L. Throne, Naperville, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 5, 1976, Ser. No. 738,179
Int. Cl.[2] B29C *17/04*
U.S. Cl. 264—92 17 Claims



1. A process for thermoforming to a draw ratio in excess of about 3 of a polyalkylene terephthalate resin sheet is substantially unoriented, has a half-time for crystallization at 410° F. below about 5 minutes, is at an average temperature in the

range of about 210°–300° F., and has an initial thermally induced average crystallinity in the range of about 0% to 18%, said process comprising:

(a) contacting said sheet with a deep-draw mold which is at a temperature in the range of about 240°–350° F.;

(b) applying forces comprising a differential in applied pressure to said sheet so as to make said sheet conform to said mold;

(c) allowing said thermoformed sheet to remain in contact with said mold until an average crystallinity of at least about 20% is achieved; and

(d) removing said thermoformed sheet from said mold;

whereby a thermoformed sheet is made which has both a draw ratio in excess of about 3 and superior uniformity in wall thickness.

4,127,632

METHOD OF PRODUCING UNDERCUT TUBULAR SYNTHETIC PLASTIC ARTICLES

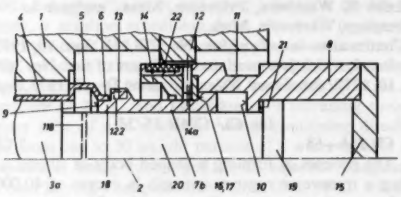
Anton Anger, Linz, Austria, assignor to Anton Anger Maschinenbau GmbH, Linz, Austria

Filed Jul. 22, 1976, Ser. No. 707,628

Claims priority, application Austria, Jul. 29, 1975, 95878/75; Oct. 10, 1975, 7770/75

Int. Cl.[2] B29C *7/00*

U.S. Cl. 264—94 **8 Claims**



1. A method of making a tubular pipe fitting of the type having a longitudinally extending axis and having a predetermined wall thickness throughout and wherein two outer circumferentially extending annular portions having first inner diameters flanking an intermediate circumferentially extending annular portion having a larger second inner diameter defining a circumferentially extending annular groove for receiving a gasket, packing or the like, the difference between the radii of said outer annular portions and the radius of said intermediate annular portion being within a range of more than to at least equal to said thickness, comprising the steps of introducing plasticized synthetic plastic material into a mold whose cavity has a configuration matching that of the fitting, the mold being shiftable between an open position to facilitate removal of the fitting and a closed position to form the cavity and facilitate formation of the fitting, the mold cavity being defined by a core having a first core part for cooperating in forming one of the outer annular portions and a second core part for cooperating in forming the other of the annular portions together with the intermediate annular portion, the core parts being axially shiftable relative to one another between a first position at which the core parts cooperate in forming the mold cavity and second position at which the second core part is adapted to be stripped from the intermediate annular portion of the fitting, the mold cavity also being defined by a first outer mold part radially shiftable between a first position at which it cooperates in forming part of the cavity for one of the outer annular portions and part of the second intermediate annular portion and second radial position away from the fitting to permit stripping of the core, the mold cavity also being defined by a second outer mold part shiftable axially between a first position at which it cooperates in forming part of the cavity for the other of the outer annular portions and the remainder of the intermediate annular portion and a second axial position away from the fitting to permit stripping of the core, the mold cavity surrounds the core including a larger portion with an outer diameter corresponding to said second inner diameter and two smaller portions flanking said larger portion and having outer diameters corresponding to said first diameters whereby the introduced material is converted into said fitting; exposing the exterior of the fitting by shifting the first and second outer mold parts to their respective second position, at least in the region of said intermediate portion and one of said outer portions; maintaining the latter one outer portion of the exposed fitting in a state in which it can undergo elastic deformation; and moving the fitting and the second core part relative to each other in a direction to force the larger portion of the core through said latter one outer portion of the fitting whereby this one outer portion expands during the passage of said larger portion therethrough and thereupon contracts so that its inner diameter is again less than the inner diameter of said intermediate portion.

4,127,633

PROCESS FOR FABRICATING BIAXIALLY ORIENTED CONTAINER OF POLYETHYLENE TEREPHTHALATE COATED WITH A COPOLYMER OF VINYLIDENE CHLORIDE

Robert L. Addleman, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,631

Claims priority, application United Kingdom, Apr. 21, 1976, 16118/76; Jul. 28, 1976, 31456/76; Feb. 11, 1977, 5714/77

Int. Cl.[2] B29C *17/07*; B32B *1/10*

U.S. Cl. 264—97 **12 Claims**

1. A process for the production of a coated, biaxially oriented container of polyethylene terephthalate comprising

a. providing a container-preform of amorphous polyethylene terephthalate;

b. heating said preform to a temperature of 40° to 80° C;

c. while said preform is at a temperature of 40° to 80° C and while preventing undue bulk crystallization, applying to said preform a coating of an aqueous dispersion of a copolymer of vinylidene chloride and drying said coating on said preform; and

d. stretching the dried coated preform axially and radially, in a blow molding process, at a temperature suitable for orientation, into a container.

4,127,634

SULFUR/GRAPHITE FIBER ELECTRODE FOR SODIUM-SULFUR BATTERIES

Louis A. Joo', Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Division of Ser. No. 750,973, Dec. 15, 1976, abandoned. This application Jan. 4, 1978, Ser. No. 866,940

Int. Cl.[2] H01M *4/04*

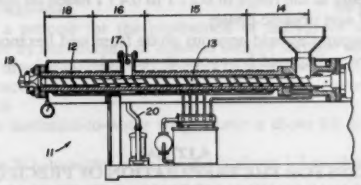
U.S. Cl. 264—105 **2 Claims**

1. A process for producing a formed sulfur-chopped graphite fiber composite sulfur electrode for use in a sodium-sulfur secondary battery comprising, in the order recited, the steps of: (a) forming a mixture comprising about 1 to about 20 wt. % chopped graphite fibers and about 99 to about 80 wt. % powdered sulfur; (b) shaping the mixture at a temperature in the range of about 110°–135° C. under a pressure sufficient to provide required electrode configuration; and (c) cooling the shaped mixture to a temperature below the melting point of the sulfur.

4,127,635
METHOD FOR EXTRUDING THERMOPLASTIC POLYMERS

Ray J. Gauthier, Islington, Canada, assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 18, 1974, Ser. No. 461,828
Claims priority, application Canada, Apr. 9, 1974, 197139
Int. Cl.[2] D02G 1/20
U.S. Cl. 264—102 **10 Claims**



1. A process for the production of shaped articles of thermoplastic materials by melt extrusion directly from the polymer feed material in pulverulent form without intermediate granulation of the feed material, by the steps of:

(a) Flowing a dehydrating gas over the polymer material during compounding of the polymer with additives;

(b) maintaining a dehydrating gaseous atmosphere over the polymer material from compounding through its entry into the extruder; and

(c) extruding the polymer into shaped articles through a screw extruder having a compression zone, followed by a decompression zone and equipped with a vacuum vent in the decompression zone, and

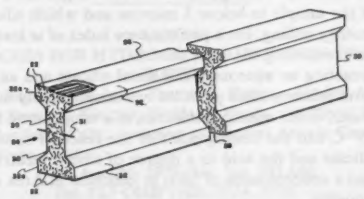
(1) in the decompression zone, providing vacuum venting thereof; and

(2) inducing condensation of volatile constituents in the downstream portion of the vent.

4,127,636
PROCESS FOR MAKING A REINFORCED BOARD MADE FROM LIGNOCELLULOSIC PARTICLES

Robert D. Flanders, Rte. 2, Box 666, #42, Wilsonville, Oreg. 97070

Continuation of Ser. No. 528,705, Dec. 2, 1974, Pat. No. 4,058,580. This application May 2, 1977, Ser. No. 793,121
The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.[2] B29J 5/00
U.S. Cl. 264—113 **1 Claim**



1. A process for making a reinforced particle board comprising:

(a) placing on a generally horizontal supporting surface a uniform mixture of lignocellulosic particles and a settable adhesive binder as a first incremental layer having peripheral edges;

(b) coating a plurality of elongate reinforcing filaments, each having a tensile strength which exceeds the tensile strength of the mixture of said lignocellulosic particles and said binder when said binder is set, each filament having a continuous length, with a quantity of settable adhesive binder;

(c) depositing atop said first incremental layer said plurality of coated reinforcing filaments;

(d) orienting said plurality of reinforcing filaments substantially straightly and in a predetermined, generally horizontal direction in side-by-side parallel relation to and transversely spaced from one another, said reinforcing filaments each having a sufficient continuous length to extend in said predetermined direction continuously substantially between the respective peripheral edges of said first incremental layer;

(e) depositing atop said reinforcing filaments a second incremental layer of said mixture coextensive with said first incremental layer;

(f) compressing said layers to a predetermined thickness by applying pressure thereto in a generally vertical direction; and

(g) while said layers are so compressed, setting the binder therein to bind said lignocellulosic particles to one another and to said reinforcing filaments substantially throughout the continuous length of said filaments so as to form said reinforced board.

4,127,637
METHOD OF MANUFACTURING A DRY-FORMED, EMBOSSED ADHESIVELY BONDED, NONWOVEN FIBROUS SHEET

Eugene J. Pietreniak, Newark, Del., and Joseph Stankavage, Chester, Pa., assignors to Scott Paper Co., Philadelphia, Pa.

Filed Mar. 13, 1975, Ser. No. 558,054
Int. Cl.[2] D04H 1/64
U.S. Cl. 264—114 **7 Claims**

1. In a method of forming a nonwoven fibrous sheet suitable for use as a replacement for conventional textile fabrics, said method comprising the sequential steps of:

(a) dry-forming a fibrous web having a basis weight of from about 30 grams per square meter to about 170 grams per square meter and having a density of less than about 0.100 grams per cubic centimeter;

(b) embossing the dry-formed web in a manner for providing spaced-apart densified areas and high loft areas over the planar extent of the web, said densified areas covering from about 15% to about 40% of the planar area of the web and having a density greater than about 0.150 grams per cubic centimeter; said high loft regions having a density of less than about 0.100 grams per cubic centimeter, said embossing forming an embossed pattern and providing a differential density in said web;

(c) stabilizing the embossed pattern by including a binder in the embossed web for retaining the differential density within the embossed web during subsequent process steps; and

(d) creping the embossed web by adhering a surface of the embossed web to a creping surface, after the embossed pattern has been stabilized, and foreshortening the web by removing it from the creping surface with a creping doctor blade.

4,127,638

PROCESS FOR CASTING POLYMER RODS

Patricia M. Cuffe, Dudley; Albert R. LeBoeuf, Sturbridge, and Edward A. Travnicek, Southbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Sep. 13, 1976, Ser. No. 722,960

Int. Cl.[2] B29C *1/02*; B29D *1/04, 11/00*

U.S. Cl. 264—331 **5 Claims**

1. An improved process of casting a substantially strain-free dimensionally stable polymeric rod having a uniform diameter which comprises,

A. Substantially filling a cylindrical polytetrafluoroethylene tube having a smooth interior surface and a temporary closure at one end with a monomeric liquid containing about 10 to 87 parts by weight N-vinyl pyrrolidone, about 90 to 13 parts by weight of a monomer selected from the group consisting of 2-hydroxyethyl methacrylate, methyl methacrylate, and mixtures thereof, and at least 0.05 parts by weight catalyst,

B. Polymerizing the liquid in a water bath of about 25°–75° C until solidified to a rod,

C. Curing the polymerized rod at an elevated temperature, and

D. Removing the cured rod from an end of said tube.

4,127,639

PROCESS FOR RECOVERING SILVER FROM RESIDUES CONTAINING SILVER AND LEAD

Norbert L. Piret, and Wilhelm Roever, both of Duisburg, Germany, assignors to Duisburger Kupferhütte, Duisburg, Germany

Filed Jun. 11, 1976, Ser. No. 695,220

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1975, 2528989

Int. Cl.[2] C22B *11/06*

U.S. Cl. 423—42 **15 Claims**

1. A process of recovering silver from aqueous lead solutions containing silver, obtained by hot chloride leaching of residues containing lead and silver and having a chloride content of more than 150 g/l, which comprises:

introducing sulphide into the solution for selective precipitation of the silver as silver sulphide,

separating the precipitated silver sulphide from the lead solution and thereafter precipitating the lead as a basic salt from the lead solution.

4,127,640

PURIFICATION OF PHOSPHORIC ACID BY SOLVENT EXTRACTION USING HEXANONES

Thomas A. Williams, Beckermet, England, assignor to Albright & Wilson Ltd., Warley, England

Continuation of Ser. No. 622,486, Oct. 15, 1975, abandoned, which is a continuation of Ser. No. 353,876, Apr. 23, 1973, Pat. No. 3,914,382. This application Aug. 23, 1976, Ser. No. 716,371

Claims priority, application United Kingdom, Apr. 26, 1972, 19476/72

The portion of the term of this patent subsequent to Oct. 21, 1992, has been disclaimed.

Int. Cl.[2] C01B *25/16*

U.S. Cl. 423—321 S **33 Claims**

1. A solvent extraction process for purifying impure wet process phosphoric acid obtained by action of sulphuric acid on phosphate rock comprising the following steps

(a) contacting said impure wet process phosphoric acid with an unsubstituted acyclic hexanone containing 2 saturated alkyl groups to form an organic phase of said hexanone and extracted phosphoric acid, and an aqueous phase raffinate, said wet process phosphoric acid being an impure aqueous phosphoric acid having an acid content in the range of 70 – 85%, said acid content being the weight percentage of phosphoric and sulphuric acids contained therein, the weight ratio of said hexanone to said aqueous impure phosphoric acid being from 0.5 : 1 to 2.1;

separating said organic phase from said aqueous phase raffinate;

(c) releasing the phosphoric acid from said organic phase by contacting the organic phase with release water in at least one stage to form an aqueous phase containing purified phosphoric acid, and an organic hexanone phase, the weight ratio of said release water to said organic phase being in the range of 0.2 : 1 to 0.4 : 1 based on the weight of said organic phase;

(d) separating said aqueous phase from said hexanone; and

(e) recycling said hexanone to step (a).

4,127,641

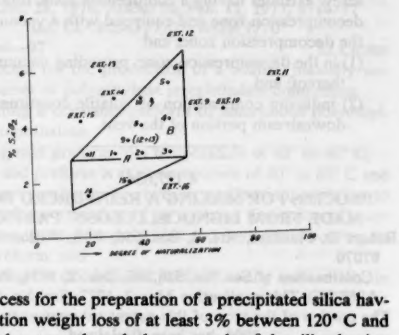
PROCESS FOR THE PREPARATION OF PRECIPITATED SILICAS HAVING MORPHOLOGY SIMILAR TO PYROGENIC SILICAS

Derek Aldcroft, Wirral; Donald Barby, Great Barrow; Anthony L. Lovell, Wirral, and James P. Quinn, Birkenhead, all of England, assignors to Joseph Crosfield and Sons Limited, Warrington, England

Continuation-in-part of Ser. No. 639,331, Dec. 10, 1975, abandoned, which is a division of Ser. No. 339,087, Mar. 8, 1973, Pat. No. 3,954,944. This application Jun. 22, 1977, Ser. No. 808,736

Int. Cl.[2] C01B *33/18*

U.S. Cl. 423—339 **8 Claims**



1. A process for the preparation of a precipitated silica having an ignition weight loss of at least 3% between 120° C and 1000° C and a strength such that a sample of the silica having a weight mean particle size on a substantially unimodal distribution in the size range 10–20 microns requires less than 6500 joules of ultrasonic energy to reduce the weight mean particle size of the sample to below 3 microns and which silica, after fluid energy milling, has a performance index of at least 7, said process comprising the steps of:

(a) reacting an aqueous alkali metal silicate and an acid to form primary silica particles by simultaneously adding to water, under mixing conditions, at a temperature between 85° C and the boiling point of the reaction mixture, the silicate and the acid to a degree of silicate neutralization and a concentration of SiO_2 as indicated in Area A in the drawing,

(b) flocculating the primary silica particles produced by the addition of an effective amount of an alkali metal salt flocculant,

(c) precipitating secondary silica in the presence of the salt by the addition of more acid or more silicate and acid to obtain a final mixture,

(d) reducing the pH of the final mixture to below 7, and

(e) isolating the silica so produced and spray drying it at a temperature such that the temperature of the silica never exceeds 450° C.

4,127,642

PRODUCTION OF SODIUM DITHIONITE FROM SULFUR DIOXIDE, SODIUM FORMATE, AND SODIUM CARBONATE WITH MINIMUM QUANTITIES OF WATER AND METHANOL

Logan C. Bostian, Virginia Beach, Va., assignor to Virginia Chemicals Inc., Portsmouth, Va.

Continuation-in-part of Ser. No. 699,462, Jun. 24, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,456

Int. Cl.[2] C01B *17/66*

U.S. Cl. 423—515 **16 Claims**

1. In a process for the production of anhydrous sodium dithionite by introducing an aqueous sodium formate solution, a sulfur dioxide-methanol solution, and an sodium compound into a reactor to form a reaction mixture wherein, on an additive basis:

(a) the methanol-to-water weight ratio is about 3.0 to about 5.2;

(b) the SO_2-to-water weight ratio is about 1.7 to about 2.4; and

(c) the ratio of equivalents of SO_2 to equivalents of sodium formate is about 1.45 to about 1.95;

the improvement which comprises using an sodium carbonate as said sodium compound and adding the same directly to the reactor in an amount in excess of its solubility in said reaction mixture such that solid sodium carbonate is present in the reactor, allowing reaction of all reagents to occur, and recovering said anhydrous sodium dithionite from said reaction mixture.

4,127,643

PREPARATION OF PIGMENTARY CHROMIC OXIDE

William W. Carlin, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 3, 1977, Ser. No. 848,044

Int. Cl.[2] C01G *37/02*

U.S. Cl. 423—607 **3 Claims**

1. A method of preparing crystalline pigmentary Cr_2O_3 having a mass average particle size less than about one micron, which method comprises:

(a) providing a substantially dry, solid composition consisting essentially of an alkali metal dichromate chosen from the group consisting of potassium dichromate and sodium dichromate and at least about 40 mole percent carbon, basis total alkali metal dichromate and carbon;

(b) heating the solid composition in an inert atmosphere to above about 500° C. will substantially all of the alkali metal dichromate is decomposed; and

(c) cooling the solid composition in an inert atmosphere, contacting the solid composition with water, and separating solid pigmentary Cr_2O_3 from soluble alkali metal compounds.

4,127,644

PROCESS FOR HYDROGEN PRODUCTION FROM WATER

John H. Norman, La Jolla; Thomas S. Roemer, Cardiff, both of Calif.; Bruce E. Kirstein, Richland, Wash., and Karol J. Mysels, La Jolla, Calif., assignors to General Atomic Company, San Diego, Calif.

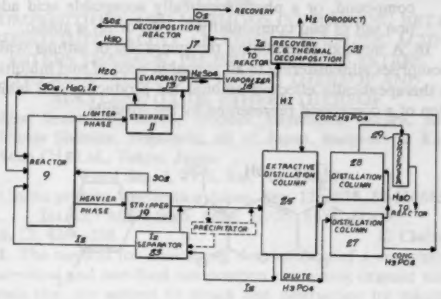
Filed Apr. 29, 1977, Ser. No. 792,445

Int. Cl.[2] C01B *1/03, 7/14, 7/18*

U.S. Cl. 423—648 R **20 Claims**

1. In a process for the production of hydrogen from water, wherein H_2O, SO_2 and I_2 are reacted in the presence of an excess amount of I_2 and SO_2 to produce sulfuric acid and hydrogen polyiodides in the form of a two-phase liquid system and wherein the heavier phase containing the major portion of the hydrogen polyiodides, which are complexes of HI and I_2, is separated from the two-phase liquid system, degassed to remove unreacted SO_2 and treated for hydrogen recovery, the improvement comprising

treating said separated heavier phase with phosphoric acid that contains at least about 50 weight percent H_3PO_4 to bind H_2O in said separated phase and precipitate I_2 therefrom and distilling said phosphoric acid-treated liquid phase to separate hydrogen iodide therefrom and passing said separated hydrogen iodide to a hydrogen recovery zone.



4,127,645

EFFERVESCENT TABLET AND METHOD

Frank Witzel, Spring Valley, and K. Warren Clark, Brewster, both of N.Y., assignors to Life Savers, Inc., New York, N.Y.

Continuation of Ser. No. 688,817, May 21, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 806,025

Int. Cl.[2] A61K *33/06, 9/46, 9/20*

U.S. Cl. 424—44 **19 Claims**

1. An effervescent candy comprising a core portion and an outer portion surrounding said core portion, said core portion comprising an effervescent couple including a leavening agent and an acidulant, said core portion further including a non-acid or cream flavor which masks the salty taste provided by the effervescent couple in the core portion, and said outer portion comprising a sugar or sugar alcohol and an acid or sour flavor compatible with said acidulant, which provides a pleasant initial flavor, and masks any salty taste emanating from said core.

4,127,646

SUBSTITUTED 2H-PYRAN-2,6(3H)-DIONE DERIVATIVES

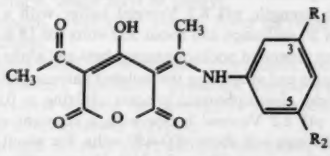
Kenneth M. Snader, Hatboro, Pa., and Chester R. Willis, Wilmington, Del., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 696,461, Jun. 16, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,550

Int. Cl.[2] A61L *9/04;* A61K *31/35;* C07D *309/22, 309/30*

U.S. Cl. 424—45 **17 Claims**

1. A compound represented by the formula:

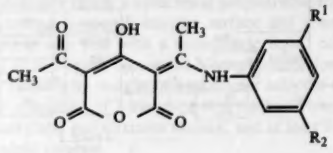


wherein:

R_1 and R_2 represent amino, alkanoylamino or methylsulfonamido; and

the alkanoyl moieites have from 2 to 5 carbon atoms, straight or branched chain, or a mono-or di-alkali metal salt of said compound, or a pharmaceutically acceptable acid addition salt of said compound when R_1 or R_2 is amino.

16. A method of inhibiting the symptoms of asthma which comprises administering to an animal in need of said inhibition a therapeutically effective amount for producing said inhibition of a compound represented by the formula



wherein:

R_1 and R_2 represent amino, alkanoylamino or methylsulfonamido; and

the alkanoyl moieties have from 2 to 5 carbon atoms, straight or branched chain, or a mono-or di-alkali metal salt of said compound, or a pharmaceutically acceptable acid addition salt of said compound when R_1 or R_2 is amino.

4,127,647

PROCESS FOR PREPARATION OF STABLE AMORPHOUS MACROLIDE ANTIBIOTIC SOLIDS

Toyomi Sato, Tokyo; Toshiyuki Kobayashi, Yokohama; Takeshi Mayama, Chigasaki, and Akira Okada, Zushi, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Chuo, Japan

Continuation-in-part of Ser. No. 674,204, Apr. 5, 1976, abandoned. This application Oct. 14, 1977, Ser. No. 842,197

Claims priority, application Japan, Apr. 8, 1975, 50-41822

Int. Cl.[2] A61K *31/74, 35/00*

U.S. Cl. 424—78 **9 Claims**

1. A process for preparing amorphous solids of macrolide antibiotics which are stable with the passage of time, said process consisting of spray drying a solution in a volatile organic solvent selected from the group consisting of dichloromethane, 1,1,1-trichloroethane and chloroform of a macrolide antibiotic and at least one cellulose polymer selected from the group consisting of ethyl cellulose, hydroxypropyl cellulose and hydroxypropylmethyl cellulose.

4,127,648

ICHORIN AND ITS USES

George B. Olson, University of Arizona, Bldg. 90, Tucson, Ariz. 85721, and Clairmont Drube, 40 Conger St., Bloomfield, N.J. 07003

Filed Jul. 7, 1977, Ser. No. 813,584

Int. Cl.[2] A61K *39/40, 39/42, 35/16*

U.S. Cl. 424—86 **30 Claims**

1. Ichorin.

4. A process for isolating Ichorin which comprises subjecting the blood sera of a disease state sensitized animal to electrophoretic separation from a Geon-Pevikon system utilizing an 0.05 ionic strength, pH 8.2 Veronal buffer with a constant current of 50 milliamps and about 300 volts for 18 hours at 6° C, isolating separated pools of gamma, beta and alpha globulins and albumins and subjecting the isolated gamma globulin pool to a second electrophoretic process utilizing a 0.025 ionic strength, pH 8.2 Veronal buffer with a constant current of 10–20 milliamps and about 400–450 volts, for about 18 hours and separating material from the 15th-32 cm sections from the cathode end of the block.

4,127,649

COMPOSITIONS HAVING ANTIBIOTIC PROPERTIES

Frank R. Atherton, Welwyn Garden City; Michael J. Hall; Cedric H. Hassall, both of Welwyn; Peter S. Ringrose, Royston, and Robert W. Lambert, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 707,158, Jul. 21, 1976, which is a continuation-in-part of Ser. No. 650,336, Jan. 19, 1976, Pat. No. 4,016,148. This application May 23, 1977, Ser. No. 799,791

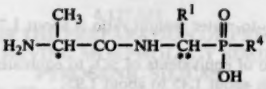
Claims priority, application United Kingdom, Jan. 27, 1975, 3417/75; Nov. 20, 1975, 47787/75; Jun. 25, 1976, 26664/76

Int. Cl.[2] A61K *37/00, 31/43*

U.S. Cl. 424—177 **15 Claims**

1. An antibacterial pharmaceutical composition containing a compound selected from the group consisiting of

(1) a peptide represented by the formula



wherein R^1 is hydrogen, lower alkyl, lower cycloalkyl, (lower cycloalkyl)-(lower alkyl), aryl, aryl-(lower alkyl), said R^1 substituents being substituted, if required, by one or more amino, hydroxy, thio, methyl thio, carboxy or guanidino to form the characterizing group of a naturally occuring Lα-amino acid; R^4 is hydroxy or methyl; the single asterisk denotes the L configuration at the carbon so marked; the double asterisk denotes the R configuration at the carbon so marked when R^1 is other than hydrogen or a pharmaceutically acceptable salt thereof; and

(2) an antibiotic selected from the group consisting of carbenicillin, ampicillin, penicillin G, sulbenicillin, [(R)-1-(2-furoyloxy)-3-methylbutyl]-penicillin, (6R)-6-[[(hexahydro-1H-azepin-1-yl)methylene]-amino]penicillanic acid, (pivaloyloxy)-methyl (6R)-6-[[(hexahydro-1H-azepin-1-yl)methylene]-amino]penicillanate, phenethicillin, methicillin, propicillin, ticarcillin and amoxycillin arginine salt; wherein the weight ratio of the peptide or pharmaceutically acceptable salt thereof to said antibiotic is from 1:100 to 100:1.

4,127,650

MEDICINAL SIMETHICONE CONTAINING COMPOSITION AND ITS METHOD OF PRODUCTION

John D. Buehler, Fort Washington, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Filed Mar. 31, 1975, Ser. No. 563,917

Int. Cl.[2] A61K *9/30, 31/695, 33/00, 33/10*

U.S. Cl. 424—184 **14 Claims**

1. A medicinal preparation for oral consumption to relieve flatulence which comprises simethicone entrapped in a matrix composition of glycerol and corn syrup solids , said glycerol amounting to from 2 to 15% of the weight of its mixture with the corn syrup solids and the simethicone amounting to from 1 to 20% of the weight of its mixture with the glycerol and the corn syrup solids.

4,127,651

ISOLATION OF UTEROEVACUANT SUBSTANCES FROM PLANT EXTRACTS

Robert H. K. Chen, Belle Mead, and Ramesh M. Kanojia, Somerville, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 29, 1977, Ser. No. 811,017

Int. Cl.[2] A61K *35/78, 31/335;* **C07D** *301/00;* **C07G** *17/00*

U.S. Cl. 424—195 **23 Claims**

1. The method of purifying residues containing biologically-active materials obtained by extraction of the zoapatle plant which comprises the steps of:

treating the residue with an acylating agent selected from

the group consisting of aliphatic acyl halides and aliphatic acyl anhydrides having 1–10 carbon atoms in the acyl group in the presence of a base selected from the group consisting of trialkylamines, pyridine, N,N-dimethylanaline and N,N-diethylanaline, reacting the resultant mixture with a reducing agent selected from the group consisting of sodium borohydride and lithium tritertiarybutoxy aluminum hydride, and separating the components of the mixture to yield a first compound having two acyl groups and an unreduced keto group and a second compound having two acyl groups and a hydroxyl group.

4,127,652
COMBATING PESTS WITH O-ALKYL-O-[PYRIMIDIN(5)YL]-(THIONO)(THIOL) PHOSPHORIC(PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Fritz Maurer; Rolf Schröder, both of Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

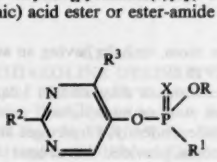
Filed Sep. 20, 1977, Ser. No. 834,940

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643262; Feb. 14, 1977, 2706127

Int. Cl.[2] A01N *9/36;* **C07F** *9/65*

U.S. Cl. 424—200 **10 Claims**

1. An O-alkyl:O:[pyrimidin(5)yl](thiono)(thiol)-phosphoric(phosphonic) acid ester or ester-amide of the formula



in which

R is alkyl with 1 to 6 carbon atoms,

R^1 is alkyl, alkoxy, alkylthio or monoalkylamino each with 1 to 6 carbon atoms,

R^2 is hydrogen, alkyl with 1 to 7 carbon atoms or phenyl,

R^3 is hydrogen or alkyl with 1 to 3 carbon atoms, and

X is oxygen or sulphur.

8. An arthropodicidal or nematicidal composition containing as active ingredient an arthropodicidally or nematicidally effective amount of a compound according to claim 1 in admixture with a diluent.

9. A method of combating arthropods or nematodes, which comprises applying to said arthropods or nematodes or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,127,653
O-ALKYL-6-CHLORO-BENZISOXAZOL-(3)-YL-THIONO-PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Walter Lorenz, Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath-Steinenbrueck; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 669,797, Mar. 24, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,295

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515793

Int. Cl.[2] A01N *9/28;* **C07F** *9/65*

U.S. Cl. 424—200 **7 Claims**

1. A compound selected from the group consisting of

O,O-dimethyl-O-6-chloro-benzisoxazol-(3)-yl-thiono-phosphoric acid ester and

O-ethyl-O-6-chloro-benzisoxazol-(3)-yl-thiono-ethanephosphonic acid ester.

5. A method of combating insects, acarids or nematodes which comprises applying to the insects, acarids or nematodes or to a habitat thereof an insecticidally, acaricidally or nematicidially effective amount of a compound according to claim 1.

4,127,654
COMPOSITIONS AND METHODS CONTAINING BETA SUBSTITUTED ALLYL ALCOHOLS, SULFURIC ACID ESTERS THEREOF, PHOSPHORIC ACID ESTERS THEREOF, ALKANOYL ESTERS THEREOF AND ALKYLENE OXIDE ETHERS THEREOF

Shigeo Inoue, Miyashiro; Norioki Miyamoto, Sakura, and Haruo Shimizu, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1976, Ser. No. 720,376

Claims priority, application Japan, Sep. 12, 1975, 50-110543

Int. Cl.[2] A01N *9/36;* **A61K** *31/66;* **A61L** *13/00*

U.S. Cl. 424—216 **12 Claims**

1. The method for minimizing deterioration of a non-pharmaceutical and non-food composition containing organic materials that are subject to attack and destruction by microorganisms, which comprises adding to and blending in said composition a compound or a mixture of compounds having the formula

$$R_1—X—CH=CH—CH_2O—Y$$

wherein R_1 is alkyl containing 1 to 20 carbon atoms or alkenyl containing 2 to 20 carbon atoms, X is S, SO or SO_2, and Y is hydrogen, alkanoyl containing 2 to 20 carbon atoms, alkenoyl containing 3 to 20 carbon atoms, SO_3M or PO_3M_2 wherein M is hydrogen, alkali metal or alkaline earth metal, or $(R_2O)_nH$ wherein R_2 is ethylene or propylene and n is from 1 to 20, in an amount effective to prevent or retard multiplication of microorganisms in said composition.

4,127,655
8H-PYRAZOLO[4',3':5,6]PYRIDO[3,4-E] [1,2,4]TRIAZOLO-[1,5-A]PYRIMIDINES

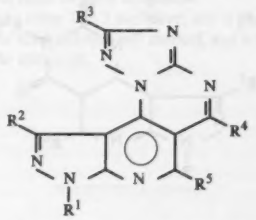
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 715,599, Aug. 18, 1976, Pat. No. 4,078,064. This application Jan. 9, 1978, Ser. No. 867,739

Int. Cl.[2] C07D *471/22;* **A61K** *31/535, 31/505, 31/54*

U.S. Cl. 424—246 **8 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or substituted benzoyl wherein the benzoyl substituent is one or two halogens, lower alkyl or trifluoromethyl groups;

R^2 is hydrogen, lower alkyl or phenyl;

R^3 is hydrogen, lower alkyl, phenyl, lower alkylthio or lower alkylsulfinyl;

R^4 is unsubstituted or substituted pyrrolidino, morpholino, thiamorpholino, piperidino, pyrazolyl, dihydropyridazinyl or piperazinyl wherein the heterocycle substituent is lower alkyl or hydroxy-lower alkylene;

R^5 is hydrogen or lower alkyl; and physiologically acceptable acid addition salts thereof.

8. A method for treating inflammatory conditions which

comprises administering to a mammal suffering therefrom a composition comprising about 10 to 300 mg. of a compound of claim 1 and a physiologically acceptable carrier therefor.

4,127,656

METHOD OF INHIBITING LIPOGENSIS WITH 3-(BENZOYL)OXIRANECARBOXAMIDES

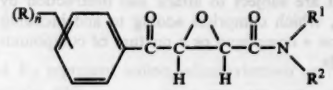
John B. Carr, Houston, Tex., and Harry G. Durham, Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 778,536, Mar. 17, 1977, Pat. No. 4,091,221. This application Feb. 27, 1978, Ser. No. 881,295

Int. Cl.[2] A61K *31/535, 31/335*

U.S. Cl. 424—248.5 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally an effective amount of a compound of the formula:



wherein *n* is zero, one, two or three, R is halogen, nitro, trifluoromethyl, alkyl, alkoxy, alkanoyl or alkamido of from one to six carbon atoms, methylsulfonyl, methylsulfonylamino or halobenzoyl, R^1 and R^2 each is hydrogen or alkyl, alkenyl or alkynyl of up to sixteen carbon atoms, or together are $-(CH_2)_4-$, $-(CH_2)_5-$, or $-C_2H_4-O-C_2H_4-$, the compound having the trans-isomeric configuration.

4,127,657

4H-PYRAZOLO[1,5-A]PYRAZOLO[4',3':5,6]PYRIDO[3,4-E]PYRIMIDIN-5(8H)ONE AND DERIVATIVES THEREOF

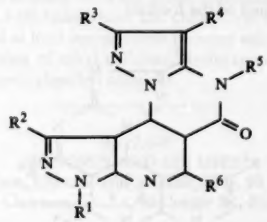
Theodor Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 659,291, Feb. 19, 1976, Pat. No. 4,070,466. This application Sep. 1, 1977, Ser. No. 829,841

Int. Cl.[2] A61K *31/415;* C07D *471/04*

U.S. Cl. 424—248.54 **10 Claims**

1. A compound of the formula



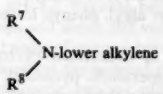
wherein

R^1 is hydrogen, lower alkyl, phenyl, phenyl-lower alkylene, benzoyl or substituted benzoyl;

R^2, R^4 and R^6 each is hydrogen or lower alkyl;

R^3 is hydrogen, lower alkyl or phenyl;

R^5 is



wherein R^7 and R^8 together join to complete the heterocycle piperidine, morpholine, thiamorpholine or piperazine; the substituent on said substituted benzoyl being halogen, lower alkyl or lower alkoxy,

and physiologically acceptable acid addition salts thereof.

10. A method for treating inflammatory conditions which comprises administering to a mammal suffering therefrom a composition comprising about 10 to 250 mg. of a compound of claim 1 and a physiologically acceptable carrier therefor.

4,127,658

1-PHENYL-2,3-BUTADIEN-1-OLS AND METHOD OF USE

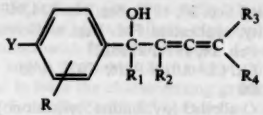
Eugene E. Galantay, Liestal, Switzerland, assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 769,530, Feb. 17, 1977, which is a division of Ser. No. 614,538, Sep. 18, 1975, Pat. No. 4,032,580, which is a division of Ser. No. 405,478, Oct. 11, 1973, Pat. No. 3,929,902, which is a continuation-in-part of Ser. No. 219,129, Jan. 19, 1972, abandoned. This application Mar. 23, 1978, Ser. No. 889,364

Int. Cl.[2] C07D *295/08;* A61K *31/535*

U.S. Cl. 424—248.57 **9 Claims**

1. A compound of the formula



wherein

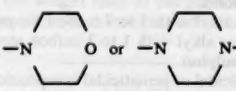
R is a hydrogen atom, or halo having an atomic weight of from about 19 to 80;

R_1 is a hydrogen atom or alkyl of 1 to 3 carbon atoms;

R_2 is a hydrogen atom or methyl; and

R_3 and R_4 are, independently, a hydrogen atom or alkyl of 1 to 3 carbon atoms, provided that at least one of R_3 and R_4 is a hydrogen atom when R_2 is methyl;

Y is a radical of the formula



(a^1) (a^2)

wherein R^c is a hydrogen atom or alkyl having 1 to 3 carbon atoms, or

a non-toxic pharmaceutically acceptable acid addition salt of a compound as defined above.

9. The method of treating inflammation in an animal which comprises administering to said animal an inflammation relieving amount of a compound of claim 1.

4,127,659

SILICON CARBIDE FILAMENTS AND METHOD

Harold E. DeBolt, Andover, and Thomas W. Henze, Lawrence, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Division of Ser. No. 646,029, Jan. 2, 1976, Pat. No. 4,068,037. This application Jan. 26, 1977, Ser. No. 762,649

Int. Cl.[2] C23C *11/00*

U.S. Cl. 427—249 **7 Claims**

1. A method of making high-strength silicon carbide filament in a continuous process comprising the steps of:

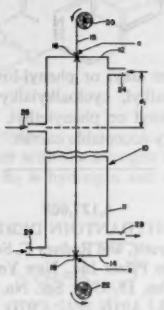
passing a carbonaceous filament through a reactor;

heating the filament to a temperature of 1400°–1500° C.;

exposing the filament while at an elevated temperature to a mixture consisting essentially of a blend of dimethyldichlorosilane and monomethyldichlorosilane, hydrogen and a substance capable of releasing carbon when heated

for forming a carbon rich silicon carbide coating on the filament;

adding additional silane blend and hydrogen to said mixture to lower the temperature of said filament; and



exposing the carbon rich silicon carbide coating to the mixture with said added silane and hydrogen for effecting the deposition of a silicon carbide coating on said carbon rich silicon carbide layer.

4,127,660
THIAZOLINE DERIVATIVES

John T. A. Boyle, Maidenhead, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

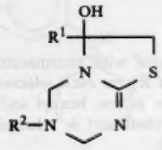
Filed Dec. 16, 1977, Ser. No. 861,325

Claims priority, application United Kingdom, Dec. 22, 1976, 53492/76

Int. Cl.² C07D *513/04;* A61K *31/38*

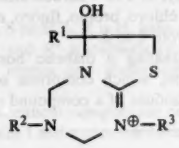
U.S. Cl. 424—249 **12 Claims**

1. A compound selected from those having the formula



(I)

their pharmaceutically acceptable acid addition salts and their derivatives comprising a cation having the formula



(II)

and a pharmaceutically acceptable anion, wherein R^1 is selected from phenyl and phenyl substituted by one to two substituents selected from halogen, trifluoromethyl, lower alkoxy, lower alkyl, nitro, amino, mono(lower alkyl)amino and di(lower alkyl)amino; R^2 is selected from phen(lower)alkyl, lower alkyl and lower alkenyl and, where present, R^3 is selected from phen(lower)alkyl, lower alkyl and lower alkenyl.

12. A pharmaceutical composition useful as an anti-ulcer agent, comprising an effective amount of a compound as claimed in claim 1 in association with a pharmaceutically suitable non-toxic carrier.

4,127,661
PIPERAZINE ALKANOLS

Bernard Falconnet, Bretigny-sur-Orge, and Henri Pinhas, Paris, both of France, assignors to Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation, Puteaux, France

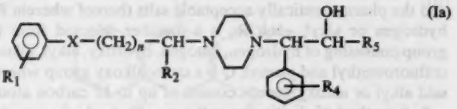
Filed Mar. 28, 1977, Ser. No. 782,051

Claims priority, application United Kingdom, Apr. 7, 1976, 14112/76

Int. Cl.² C07D *295/08;* A61K *31/495*

U.S. Cl. 424—250 **5 Claims**

1. A compound selected from the group consisting of compounds of the formula:



(Ia)

in which:

R_1 is selected from hydrogen, chlorine, methyl, hydroxyethyl, dimethyl, methoxy, trimethoxy and 3,4 benzo,

R_2 is selected from hydrogen and methyl,

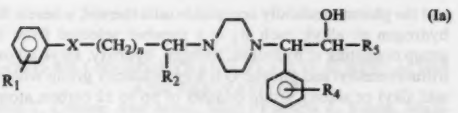
R_4 is selected from hydrogen, trifluoromethyl and methoxy,

R_5 is selected from C_{1-3} alkyl and phenyl,

X is selected from oxygen and sulfur,

n is an integer from 1 to 3 inclusive, and a pharmaceutically acceptable acid addition salt thereof.

4. A therapeutic composition having a vasodilator action containing a vasodilator effective amount of a compound selected from the group consisting of compounds of the formula:



(Ia)

in which:

R_1 is selected from hydrogen, chlorine, methyl, hydroxyethyl, dimethyl, methoxy, trimethoxy and 3,4 benzo,

R_2 is selected from hydrogen and methyl,

R_4 is selected from hydrogen, trifluoromethyl and methoxy,

R_5 is selected from C_{1-3} alkyl and phenyl,

X is selected from oxygen and sulfur,

n is an integer from 1 to 3 inclusive, and a pharmaceutically acceptable acid addition salt thereof, and a therapeutically acceptable excipient.

4,127,662
CYANOALKYL-5-(SUBSTITUTED TRIPHENYLMETHYL)PICOLINATE

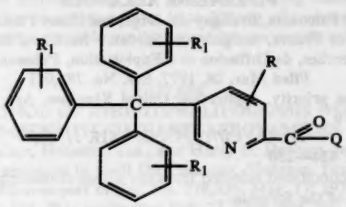
Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 636,010, Nov. 28, 1975, Pat. No. 4,044,140. This application Aug. 12, 1977, Ser. No. 824,029

Int. Cl.² A61K *31/44;* C07D *213/57*

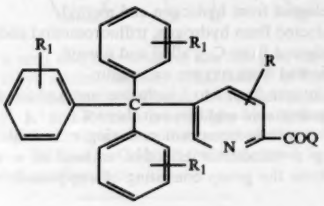
U.S. Cl. 424—266 **8 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof wherein R is hydrogen or alkyl; each R_1 is a member selected from the group consisting of hydrogen, halogen, hydroxy, alkyl, alkoxy, trifluoromethyl and phenyl; Q is a cyanoalkoxy group wherein said alkyl or alkoxy groups consist of up to 12 carbon atoms.

5. A method of eliciting an anti-acne effect which comprises topically administering a therapeutically effective quantity of a compound of claim 1 of the formula:



and the pharmaceutically acceptable salts thereof, wherein R is hydrogen or alkyl; each R_1 is a member selected from the group consisting of hydrogen, halogen, hydroxy, alkyl, alkoxy, trifluoromethyl and phenyl; Q is a cyanoalkoxy group wherein said alkyl or alkoxy group consists of up to 12 carbon atoms.

4,127,663

THIAZOLE DERIVATIVES TO TREAT INFLAMMATION

John F. Cavalla, Isleworth, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed May 31, 1977, Ser. No. 801,972

Claims priority, application United Kingdom, Jun. 8, 1976, 23521/76

Int. Cl.[2] A61K *31/425*

U.S. Cl. 424—270 **8 Claims**

6. An aerosol pharmaceutical composition for topical administration comprising an anti-inflammatory effective amount of 4-(p-chlorophenyl)-2-phenyl-5-thiazoleacetic acid or a pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable topical carrier.

4,127,664

METHOD FOR TREATING BLACKHEAD DISEASE

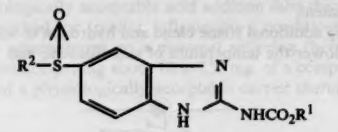
Rudiger D. Haugwitz, Titusville, and Larry R. Cruthers, Flemington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 11, 1977, Ser. No. 850,583

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 R **15 Claims**

1. A method of treating blackhead disease in birds, which comprises administering to a bird a therapeutically effective amount of a compound of the structure



wherein R^1 is lower alkyl or phenyl-lower alkyl, and R^2 is lower alkyl, cycloalkyl, cycloalkylalkyl, cycloalkenyl, cycloalkenylalkyl, benzyl or phenylethyl, dispersed in a nontoxic physiologically acceptable carrier.

4,127,665

THIENOHYDANTOIN DERIVATIVES

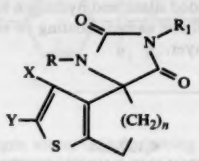
Reinhard Sarges, Mystic, and Rodney C. Schnur, Noank, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,542

Int. Cl.[2] A01N *9/12*; C07D *495/10*

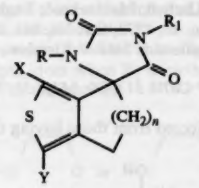
U.S. Cl. 424—273 R **20 Claims**

1. A compound selected from those of the formulae:



I

and



II

and the base salts thereof with pharmaceutically acceptable cations, wherein R and R_1 are each selected from hydrogen, alkyl of 1 to 4 carbon atoms, benzyl and monosubstituted benzyl wherein said substituent is selected from hydroxyl, chloro, nitro and amino;

X and Y are each selected from hydrogen, alkyl of from 1 to 4 carbon atoms, chloro, bromo, fluoro, phenyl and monosubstituted phenyl wherein said substituent is selected from hydroxyl, alkyl of 1 to 4 carbon atoms, alkoxyl of 1 to 4 carbon atoms, chloro, bromo, fluoro, nitro and amino; and *n* is an integer from 1 to 3.

19. A method of treating a diabetic host for diabetes-associated complications, which comprises administering to said host an effective amount of a compound of claim 1.

4,127,666

DISUBSTITUTED 2,5-BENZAMIDES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Andre Buzas, Bievres, and Gilbert Lavielle, Orleans, both of France, assignors to Universite d'Orleans, Orleans-la-Source, France

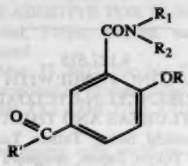
Filed Feb. 15, 1977, Ser. No. 768,893

Claims priority, application France, Feb. 26, 1976, 76 05372

Int. Cl.[2] A61K *31/40, 31/445*; C07D *207/02*

U.S. Cl. 424—274 **6 Claims**

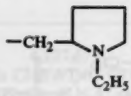
1. A disubstituted 2,5 benzamide having the formula



where

R is a C_{1-5} alkyl group,

R_1 and R_2, together with the nitrogen atom form a piperidino group, or R_1 is hydrogen and R_2 is the following group:



or a pharmaceutically acceptable acid addition salt, or the iodomethylate thereof.

4. A pharmaceutical composition for the treatment of vomiting containing as active substance a benzamido or salt according to claim 1, and a pharmaceutically acceptable diluent.

4,127,667

SUBSTITUTED THIOPYRANO(4,3-b)PYRANS

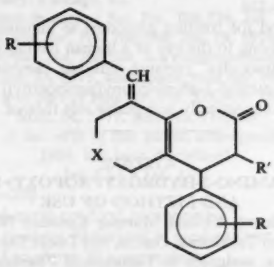
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 5, 1978, Ser. No. 893,722

Int. Cl.[2] A61K *31/335, 31/38;* C07D *493/02, 497/02*

U.S. Cl. 424—275 12 Claims

1. A compound of the structure



wherein X is O, S or SO_2, R is H, halo, alkyl, alkoxy, cyano or trifluoromethyl and R′ is carbethoxy, carboxy, alkali metal carboxylate or cyano, and physiologically acceptable salts thereof.

10. A pharmaceutical composition comprising a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,127,668

MITICIDAL MIXTURES AND METHOD UTILIZING A MACROTETROLIDE COMPOUND

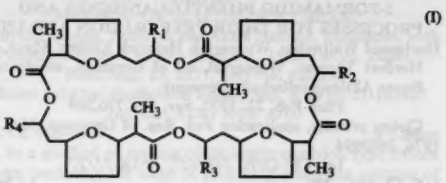
Silas S. Sharp, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 746,107, Nov. 30, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 843,410

Int. Cl.[2] A01N *9/02, 9/24, 9/28*

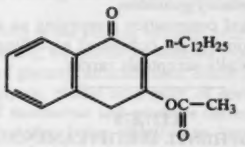
U.S. Cl. 424—279 3 Claims

1. A miticidally effective mixture consisting essentially of



(I)

and



(II)

wherein

R_1, R_2, R_3 and R_4 are each selected from the group consisting of methyl and ethyl and the ratio of I to II is between 5:1 and 1:5.

4,127,669

[(4-OXO-4H-1-BENZOPYRAN-3-YL)OXY] ACETIC ACIDS AND DERIVATIVES

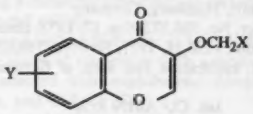
David T. Connor, Ann Arbor, Mich.; Patricia A. Young, Madison, N.J., and Maximillian von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 13, 1977, Ser. No. 841,781

Int. Cl.[2] A61K *31/35;* C07D *311/76, 257/04;* A61K *31/41*

U.S. Cl. 424—283 10 Claims

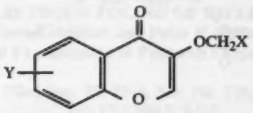
1. A compound of the formula I:



I

wherein Y is hydrogen, lower alkyl, halogen or lower alkoxy; X is carboxy, alkoxycarbonyl, carboxamide or cyano, and the non-toxic, pharmaceutically acceptable salts thereof.

9. A pharmaceutical composition for inhibiting reagin-mediated allergic manifestations in mammals in need thereof, which comprises an effective amount of a compound of the formula I:



I

wherein Y is hydrogen, lower alkyl, halogen or lower alkoxy; X is carboxy, alkoxycarbonyl, carboxamide or cyano, and the non-toxic, pharmaceutically acceptable salts thereof together with a pharmaceutically acceptable carrier therefor.

4,127,670

2-FORMAMIDO PHENYLGUANIDINES AND PROCESSES FOR THEIR PREPARATION AND USE

Hartmund Wollweber, Wuppertal; Heinrich Kölling, Haan, and Herbert Thomas, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Feb. 22, 1977, Ser. No. 770,389

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609994

Int. Cl.[2] C07C *149/437;* A61K *31/27*

U.S. Cl. 424—300 3 Claims

1. The compound N-(2-formamido-4-phenylthiophenyl)-N′,N″-bis(carbomethoxy)guanidine.

2. A pharaceutical composition comprising an anthelmintically effective amount of the compound according to claim 1 and a pharmaceutically acceptable carrier.

4,127,671

P-ACETAMIDOPHENYL DIETHYLAMINOACETATE

Jean-Claude Cognacq, Garches, France, assignor to Societe Anonyme dite: HEXACHIME, Rueil Malmaison, France

Filed May 26, 1977, Ser. No. 800,927

Int. Cl.[2] A61K *31/24;* C07C *103/38*

U.S. Cl. 424—311 6 Claims

1. A compound selected from the group consisting of p-acetamidophenyl diethylaminoacetate and pharmaceutically acceptable acid addition salts thereof.

3. A pharmaceutical composition to induce analgesia consisting essentially of a physiologically effective amount of a compound selected from the group consisting of p-acetamidophenyl diethylaminoacetate and pharmaceutically acceptable acid addition salts thereof as active ingredient in conjunction with a pharmaceutically acceptable adjuvant.

4. A method of treating a human being to induce analgesia which consists of administering to the human being a physiologically effective amount of a pharmaceutical composition consisting essentially of a compound selected from the group consisting of p-acetamidophenyl diethylaminoacetate and pharmaceutically acceptable acid addition salts thereof as active ingredient in conjunction with a pharmaceutically acceptable adjuvant.

4,127,672

INSECT REPELLANTS

Manfred Klier, Aumuhle; Udo Hoppe, and Wolfgang Schritt, both of Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

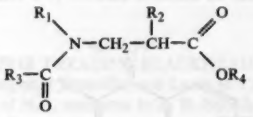
Continuation of Ser. No. 398,272, Sep. 17, 1973, abandoned. This application Feb. 14, 1977, Ser. No. 768,222

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1972, 2246433

Int. Cl.[2] A01N *9/24*

U.S. Cl. 424—311 6 Claims

1. A method of repelling insects comprising applying to a region from which the insects are to be repelled a repellent composition consisting essentially of a diluent and 0.1 to 95% by weight of at least one active repellent substance having the structure



in which

R_1 is a branched or unbranched alkyl radical having 1 to 6 carbon atoms,

R_2 is a hydrogen atom or a methyl group or ethyl group,

R_3 is a branched or unbranched alkyl or alkoxy group having 1 to 8 carbon atoms, and

R_4 is a branched or unbranched alkyl radical having 1 to 6 carbon atoms.

4,127,673

COMBATING FUNGI WITH NEW N-4-HALOBENZYL-N-CYCLOALKYL-N′-PHENYLUREAS AND THIOUREAS

Yasuo Yamada; Junichi Saito; Tatsuo Tamura, and Yoshio Kurahashi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

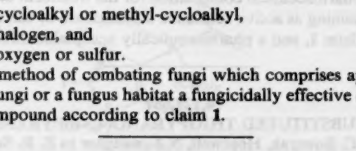
Filed Jul. 19, 1977, Ser. No. 816,979

Claims priority, application Japan, Jul. 20, 1976, 51/85582

Int. Cl.[2] A01N *9/12;* C07C *127/15, 157/05*

U.S. Cl. 424—322 10 Claims

1. An N-4-halobenzyl-N-cycloalkyl-N′-phenyl urea or thiourea of the formula



in which

R is cycloalkyl or methyl-cycloalkyl,

X is halogen, and

Y is oxygen or sulfur.

9. A method of combating fungi which comprises applying to the fungi or a fungus habitat a fungicidally effective amount of a compound according to claim 1.

4,127,674

METHOD OF TREATMENT FOR GLAUCOMA

Irving H. Leopold, Newport Beach, Calif., assignor to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Filed Mar. 21, 1977, Ser. No. 779,340

Int. Cl.[2] A61K *31/165*

U.S. Cl. 424—324 3 Claims

1. A method for treating glaucoma in humans comprising topically applying to the eye of a human having glaucoma an effective, intraocular pressure-reducing amount of 5-[1-hydroxy-2-(1-methyl-3-phenylpropyl)aminoethyl] salicylamide or a pharmaceutically acceptable salt thereof.

4,127,675

4-(ALKYLAMINO-2-HYDROXYPROPOXY)-INDENE AND METHOD OF USE

Masuo Murakami; Kiyoshi Murase; Kunihiro Niigata, all of Tokyo; Shiro Tachikawa, Omiya, and Toichi Takenaka, Ageo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 568,097, Apr. 14, 1975, Pat. No. 4,045,482, which is a continuation of Ser. No. 141,936, May 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 876,070, Nov. 12, 1969, abandoned. This application Oct. 21, 1976, Ser. No. 734,514

Claims priority, application Japan, Nov. 12, 1968, 43-82297; Sep. 11, 1969, 44-72582

Int. Cl.[2] C07C *93/06;* A61K *31/135*

U.S. Cl. 424—330 6 Claims

1. A method of establishing an adrenergic β-receptor blockade which comprises administering to a patient in which such blockade is desired a pharmaceutically effective amount of a compound selected from the group consisting of 4-(3-isopropylamino-2-hydroxypropoxy)indene, 4-(3-tert-butylamino-2-hydroxypropoxy)indene and a non-toxic acid addition salt thereof.

4. A compound selected from the group consisting of 4-(3-tert-butylamino-2-hydroxypropoxy)indene and a non-toxic acid addition salt thereof.

4,127,676

FODDER ADDITIVE FOR RUMINANTS

Matti J. Merensalmi, Turku, Finland, assignor to Farmos-Yhtyma Oy, Finland

Filed Mar. 17, 1977, Ser. No. 778,359
Claims priority, application Finland, Mar. 19, 1976, 760746
Int. Cl.[2] A23K *1/00, 1/02*
U.S. Cl. 426—2 9 Claims

1. Method of increasing milk yield in a ruminant which comprises enriching fodder for said ruminant with an additive consisting essentially of a sugar alcohol having five or six hydroxyl groups to the fodder of the ruminant in an amount of at least 10% by weight calculated on the dry matter of fodder and feeding said enriched fodder to the ruminant in an amount sufficient to administer 40 to 500 grams daily of said sugar alcohols to said ruminant, whereby the milk yield from said ruminant is increased.

4,127,677

XYLITOL-COATED CHEWING GUM AND METHOD

Paul R. Fronczkowski, Oakland, N.J., and Dominick R. Friello, Danbury, Conn., assignors to Life Savers, Inc., New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,783
Int. Cl.[2] A23G *3/30*
U.S. Cl. 426—5 8 Claims

1. A xylitol-coated chewing gum including a gum center comprising gum base, sweetener, and flavor, and a xylitol coating thereon containing from about 95 to about 99.5% xylitol, binder, color, and flavor said coating applied from an aqueous solution containing at least about 55% by weight solids of which at least about 95% by weight is xylitol.

4,127,678

CASEINATE REPLACEMENT IN SEMI-MOIST PET FOODS

Morris P. Burkwall, Jr., Marengo, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 706,534, Jul. 19, 1976, abandoned, and Ser. No. 706,536, Jul. 19, 1976, Pat. No. 4,044,158, said Ser. No. 706,534, is a continuation-in-part of Ser. No. 598,415, Jul. 23, 1975, abandoned, said Ser. No. 706,536, is a continuation-in-part of said Ser. No. 598,415. This application Mar. 14, 1977, Ser. No. 777,166
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.[2] A23L *1/31*
U.S. Cl. 426—250 18 Claims

1. In a semi-moist pet food comprising:

I. about 30 to about 70 percent of meat or meat by-products;

II. about 15 to about 30 percent sugar;

III. about 2 to about 10 percent polyhydric alcohol;

IV. about 0.5 to about 10 percent regular corn starch;

V. a sufficient amount of nutritional supplements, flavor, and color ingredients; and

VI. about 7.5 to about 25 percent casein salt — the improvement wherein the casein salt is replaced by a composition comprising:

(a) a sufficient amount of a vegatable protein source to replace the protein contributed by casein salt on approximately a weight for weight basis;

(b) about 2 to about 20 percent by weight pregelatinized or modified amylaceous ingredients;

(c) about 0.01 to 2 percent by weight of a chelator system comprising an acid chelator and a sufficient amount of an edible base to adjust the pH of the food to a pH in the range of about 6.1 to about 8.0 and wherein the casein salt component of the pet food is reduced to less than 7.5 percent

— all percentages herein being based on the weight of the pet food.

4,127,679

METHOD OF MAKING ICE CREAM

Haruyuki Amano, Yachiyo, and Akira Nakano, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1977, Ser. No. 825,199
Claims priority, application Japan, Sep. 3, 1976, 51-105527
Int. Cl.[2] A23G *9/04, 9/00*
U.S. Cl. 426—565 9 Claims

1. In a method of making oil-in-water emulsion type frozen dessert, including the steps of preparing a starting mixture of the ingredients of the frozen dessert and homogenizing and freezing the starting mixture, the improvement which comprises:

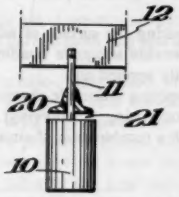
incorporating in the starting mixture, prior to homogenizing and freezing, an emulsifier selected from the group consisting of glyceryl monoelaidate, eladic acid ester of propylene glycol, elaidic acid ester of sorbitol, elaidic acid ester of saccharose and mixtures thereof, the amount of said emulsifier being effective to form an oil-in-water emulsion of said starting mixture.

4,127,680

MAKING A CAPACITOR EMPLOYING A TEMPORARY SOLID MASK IN THE POROUS ANODE

George A. Shirn, and Sidney D. Ross, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 3, 1977, Ser. No. 765,175
Int. Cl.[2] H01G *9/05;* B05D *1/32*
U.S. Cl. 427—80 9 Claims



1. A method for making a solid electrolyte capacitor having a porous valve metal pellet with a lead wire extending from one surface thereof comprising

(a) forming a dielectric film over the surfaces of said porous valve metal pellet;

(b) applying a sealing film over at least said one surface and into the pores of said pellet with a molten masking compound selected from naphthalene, camphor, p-dichlorobenzene, and CCl_3CF_2Cl;

(c) applying an insulative coating in a water-dispersed form to said wire while providing a temperature and atmospheric pressure at which said masking compound is solid;

(d) solidifying said coating; and vaporizing said solid masking compound from said one surface so that a space is formed between and completely separates said solidified insulative coating and said pellet.

4,127,681

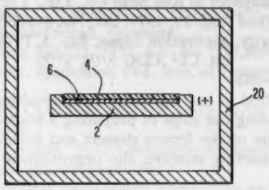
SINGLE ELECTRODE POLING OF DIELECTRIC FILMS

Richard A. Ferren, Ambler, and Peter F. Radice, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 24, 1976, Ser. No. 726,382
Int. Cl.[2] B05D *5/12*
U.S. Cl. 427—100 11 Claims

1. A method of preparing a piezoelectric pellicular resin article comprising bringing one surface of a pellicle of a polarizable dielectric resin into intimate contact with an electroconductive surface which is the sole electrode and sole electrical

contact of an ungrounded electrical circuit having only one active charging electrode, and charging said electroconductive



surface with an electric potential sufficient to polarize and make piezoelectric said pellicular resin article.

4,127,682

ABRASION AND ANTIFOG-RESISTANT OPTICAL ELEMENT

Bernard L. Laurin, Ludlow, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 717,065, Aug. 24, 1976, Pat. No. 4,064,308, which is a continuation of Ser. No. 578,793, May 19, 1975, abandoned. This application Sep. 21, 1977, Ser. No. 835,378

Int. Cl.[2] B05D *3/10, 3/02*

U.S. Cl. 427—164 **5 Claims**

1. The process of forming an abrasion-resistant antifogging optical element of glass or plastic transparent base element comprising:

initially preparing the surface of said transparent base element to provide adequate bonding of the coating to be subsequently applied and

thereafter applying a durable abrasion-resistant antifogging coating comprising a polyvinyl alcohol lightly cross-linked with a combination of zirconium nitrate and formaldehyde.

4,127,683

METHOD OF STACKING GLASS SHEETS

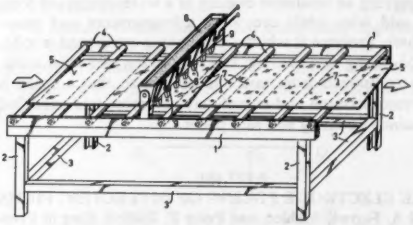
Dieter Flemmer; Friedrich Halberschmidt, both of Herzogenrath, and Karl-Josef Feiten, Wuerseln, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Aug. 12, 1976, Ser. No. 713,809

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537034

Int. Cl.[2] B05D *5/00*

U.S. Cl. 427—287 **9 Claims**



1. A method of stacking or packing sheets of glass which comprises depositing on a surface of a plurality of sheets of glass spaced drops of molten paraffin or wax to form upon solidification spaced raised spots on the surface of the sheet, and stacking said plurality of sheets of glass with said raised spots forming an intercalation between adjacent sheets.

4,127,684

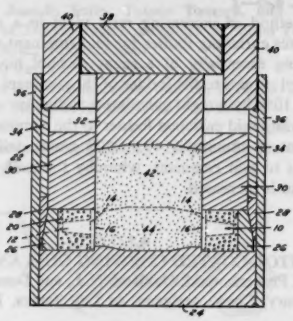
CRACK PROTECTION METHOD

Robert R. Baker, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1977, Ser. No. 863,990

Int. Cl.[2] C04B *35/58*

U.S. Cl. 427—287 **4 Claims**



1. A method of protecting a ceramic body from cracking during a hot pressing operation in which pressure is applied to the body, the ceramic body having a portion thereof of complex shape defined by surfaces extending in different directions, the complex shaped portion of the body being supported by an encapsulating medium during the hot pressing operation, which method comprises the steps of:

applying a first layer of a release material to the surfaces of the ceramic body which are to be load reaction surfaces during the hot pressing operation, said release material being non-reactive with the ceramic body and encapsulating medium at the temperatures and pressures encountered in the hot pressing operation; and

applying a second layer of said release material to the surfaces of the ceramic body which are not to be load reaction surfaces during the hot pressing operation wherein said first layer is of lesser thickness than said second layer.

4,127,685

PROCESS FOR COATING AN OBJECT WITH A CONTINUOUS COATING OF PLASTICS FILM

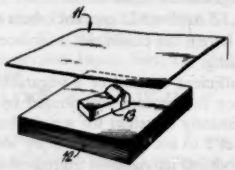
William J. Busby, Tervuren, and Piet L. H. Verbunt, Asse, both of Belgium, assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 667,496, Mar. 17, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 834,527

Claims priority, application United Kingdom, Mar. 21, 1975, 11935/75

Int. Cl.[2] B44D *1/14*; B65B *31/02*; C08L *23/08*

U.S. Cl. 427—294 **7 Claims**



1. A process for coating an object with a continuous coating of plastics film which consists of a pre-formed solid self-sealing tacky plastics film being brought into contact with an object, the film is stretched over the object and substantially all of the film made to adhere substantially permanently to the object,

the film being made from a composition selected from the group consisting of:

(a) A composition comprising (i) 90 to 99.95 wt.% of a copolymer of ethylene and a vinyl (or hydrocarbyl substituted vinyl) ester of a C_1 to C_{30} monocarboxylic acid containing at least 89 wt.% of ethylene and either 0.05 to 10 wt.% of an amorphous hydrocarbon polymer having an average number molecular weight of not more than 3000 or 0.05 to 5 wt.% of liquid polyisobutylene or liquid polybutene or a combination of 0.05 to 10 wt.% of the hydrocarbon polymer and 0.05 to 5 wt.% of the polyisobutene or polybutene, provided the combined weight of hydrocarbon polymer and polyisobutene or polybutene is not more than 10 wt.%;

(b) A composition comprising (i) 90 to 99.95 wt.% of a copolymer of ethylene and a vinyl (or hydrocarbyl substituted vinyl) ester of a C_1 to C_{30} monocarboxylic acid (ii) either 0.05 to 10 wt.% of a hydrocarbon resin, or 0.05 to 5 wt.% of polybutene or polyisobutene or a combination of 0.05 to 10 wt.% of the hydrocarbon resin and 0.05 to 5 wt.% of polybutene or polyisobutene or a combination of 0.05 to 10 wt.% of the hydrocarbon resin and 0.05 to 5 wt.% of polybutene or polyisobutene provided the combined weight of the resin and polybutene or polyisobutene is not more than 10 wt.% and (iii) 0.01 to 3.0 wt.% based on the combined weight of (i) and (ii) of a partial carboxylic acid ester of a polyol;

(c) A composition comprising (i) 95.0 to 99.9 wt.% of either a copolymer of ethylene and a vinyl (or hydrocarbyl substituted vinyl) ester of a C_1 to C_{30} monocarboxylic acid, said copolymer containing 0.10 to 1.95 wt.% of the vinyl (or hydrocarbyl substituted vinyl) ester of 95.0 to 99.9 wt.% of a mixture of a thermoplastic polyolefin and a copolymer of ethylene and a vinyl (or hydrocarbyl substituted vinyl) ester of a C_1 to C_{30} monocarboxylic acid, the proportion of polymerised vinyl (or hydrocarbyl substituted vinyl) ester in the mixture being from 0.10 to 1.95 wt.% and (ii) 0.01 to 5.0 wt.% of a partial ester of a carboxylic acid and a polyol;

(d) A composition comprising (i) 85 to 99.8 wt.% of a thermoplastic polyolefin (ii) 0.1 to 10.0 wt.% of a partial ester of a carboxylic acid and a polyol and (iii) either 0.1 to 10 wt.% of a hydrogenated hydrocarbon resin or 0.1 to 10 wt.% of polybutene or polyisobutene, provided the combined weights of (ii) and (iii) is not more than 15 wt.%; and

(e) A composition comprising 100 parts by weight of PVC, 10–20 parts by weight of plasticizer, 5–15 parts by weight of epoxidized soya bean oil and 0 to 5 parts by weight of a lubricant.

4,127,686

PROCESS FOR TREATING WOOD

Takeji Motai, Chofu, Japan, assignor to Shin-Asahigawa Co., Ltd., Japan

Filed Dec. 27, 1976, Ser. No. 754,266
Claims priority, application Japan, May 12, 1976, 51-53336
Int. Cl.[2] B27K *3/02, 3/34;* B05D *7/06*
U.S. Cl. 427—351 **6 Claims**

1. A process for treating wood comprising:

(1) contacting the wood with a hot solution containing 0.1 to 0.5% of anionic surface active agent at 92° to 98° C. for 4 to 12 hours;

(2) immediately thereafter contacting the wood treated in (1) with a solution containing 0.05 to 0.1% of anionic surface active agent and 0.2 to 0.4% of soda ash, in a pressure boiler for 2 to 3 hours at a temperature of 120° to 130° C. and a pressure of 2 to 3 kg/cm^2;

(3) draining the solution from said pressure boiler and then subjecting the thus treated wood to vacuum of up to 500 mm/hg and dehydrating it until the moisture content of the wood reaches the fiber saturation point of 28 to 32%; and

(4) drying the wood.

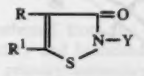
4,127,687

PREVENTION OF FOULING OF MARINE STRUCTURES SUCH AS BOAT HULLS

John A. Dupont, Glenside, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 19, 1976, Ser. No. 706,726
Int. Cl.[2] C09D *5/16*
U.S. Cl. 428—35 **40 Claims**

1. A method for controlling fouling by barnacles, hydroids, and algae of an underwater surface of a marine structure in salt water comprising the steps of applying a coating of an organic paint to said surface, said paint containing an effective amount of a compound of the formula:



wherein Y is

(1) an unsubstituted alkyl group of one to 18 carbon atoms,

(2) a substituted alkyl group having at least one hydrogen atom replaced by hydroxy, halo, cyano, alkylamino, dialkylamino, phenylamino, halophenylamino, carboxy, carbalkoxy, alkoxy, aryloxy, morpholino, piperidino, pyrrolidonyl, carbamoxy, or isothiazolonyl, wherein the total number of carbon atoms in the substituted alkyl group does not exceed 18,

(3) an unsubstituted or halo-substituted alkenyl group of two to 18 carbon atoms,

(4) unsubstituted or halo-substituted alkynyl group of two to 18 carbon atoms,

(5) an unsubstituted or alkyl-substituted cycloalkyl group having a three to six carbon atom ring and up to 12 carbon atoms,

(6) an unsubstituted or a halo-, lower alkyl-, or lower alkoxy-substituted aralkyl group wherein the total number of carbon atoms in the aralkyl group does not exceed 10, or,

(7) an unsubstituted or a phenoxy-, hydroxy-, trihalo-, methyl-, halo-, nitro-, lower alkyl-, or lower carbalkoxy-, substituted aryl group wherein the total number of carbon atoms in the aryl group does not exceed 10,

R is hydrogen, halogen, or a (C_1–C_4) alkyl group, and

R^1 is hydrogen, halogen, or a (C_1–C_4) alkyl group, provided that at least one of R and R^1 is halogen, and the salts of a compound of the above formula with a strong acid, and further provided that when one of R and R^1 is other than halogen, the solubility of the compound as determined by the UV method is between about 0.5 and 500 ppm, and exposing the painted surface to fouling conditions in salt water.

4,127,688

SEALED CROSS-LINKED THERMOPLASTIC SHEETS

Anne C. Bieler, Mauldin, and Milton A. Howe, Jr., Spartanburg, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 753,038, Dec. 22, 1976. This application Apr. 29, 1977, Ser. No. 792,177
Int. Cl.[2] B65D *85/30;* B32B *27/08*
U.S. Cl. 428—36 **2 Claims**

1. An improved seal between thermoplastic sheets comprising:

(a) two sheets of self-supporting thermoplastic film, said sheets comprising material selected from the group consisting of polyethylene and ethylene vinyl acetate copolymers;

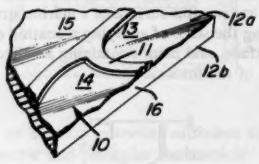
(b) a discrete seal between said sheets, said seal having been formed by the application of heat and pressure to said sheets without an adhesive therebetween; and,

(c) the materials forming said seal being cross-linked by ionizing radiation to a dosage level of at least 2 MR greater than any other portion of said sheets.

4,127,689
SIMULATED STAINED GLASS ARTICLES

John F. D. Holt, 4959 Cheviot Dr., Columbus, Ohio 43220

Continuation of Ser. No. 630,410, Nov. 10, 1975, abandoned. This application Mar. 11, 1977, Ser. No. 776,704
Int. Cl.[2] B44F 1/06
U.S. Cl. 428—38 6 Claims

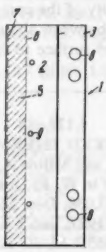


1. A simulated stained glass article comprising a sheet of transparent or translucent plastic material having two major surfaces, at least one of said major surfaces being deformed to distort or refract light incident thereon, said distortion or refraction of light being caused solely by said deformation of said at least one of said major surfaces, a thermofluid or thermosetting composition disposed on at least one of said major surfaces thereof and coloured to give a leaded effect, said thermofluid or thermosetting composition comprising a plurality of layers which provide a three dimensional appearance for said leaded effect, and at least one coloured ink printed on at least one of said major surfaces to give a decorative effect between the areas of the sheet having said leaded effect.

4,127,690
FILING STRIP

Karl Schleifenbaum, Haiger; Claus Koenig, Erlangen; Wilhelm Thurmann, Obersdorf bei Siegen, and Rolf Münnich, Siegen, all of Fed. Rep. of Germany, assignors to Meteor-Siegen Apparatbau Paul Schmeck, Siegen, Fed. Rep. of Germany

Filed Jul. 5, 1972, Ser. No. 269,237
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1971, 7125750[U]; Jul. 22, 1971, 7128183[U]
Int. Cl.[2] A61F 13/02; E04F 13/20; B32B 3/14, 3/04
U.S. Cl. 428—40 3 Claims

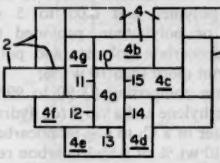


1. A one piece perforated filing strip for non-perforated documents which are required to be filed by means of locating pins, tongues or the like, comprising a first part adapted to be secured to the document by adhesion and bearing a self-adhesive strip thereon of less width than said first part and an adhesive-free perforated second part projecting laterally of said first part and integral therewith, the first and second parts being separated from each other by a fold line, whereby the second part is capable of being folded over said first part, the adhesive-free portion of said first part being of greater width than said second part.

4,127,691
THERMAL SHOCK RESISTANT HONEYCOMB STRUCTURES

Rodney I. Frost, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 20, 1977, Ser. No. 807,889
Int. Cl.[2] B32B 3/12
U.S. Cl. 428—116 3 Claims



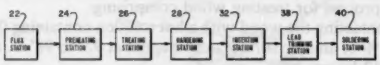
1. A honeycomb structure of brittle material having improved thermal shock resistance and comprising a unitary body of cellular structure having a matrix of interconnected web portions which form a plurality of cells extending longitudinally through said body; said web portions defining partitions between, and wall portions of, the cells; said plurality of cells, when viewed in a plane perpendicular to a longitudinal axis through said body, extending across said body and, with the exception of peripheral cells, all being of uniform size and shape; and each of said cells having joint means formed by the intersection of adjacent wall portions which is movable to compensate for expansion/contraction stresses thermally induced within the cellular structure.

wherein the improvement comprises said shape of the cells being a rectangle whose length is twice its width and being defined by a pair of opposed long wall portions and a pair of opposed short wall portions; each cell, with the exception of peripheral cells, being contiguously surrounded by: (a) another one cell sharing each short wall portion of said each cell and having its rectangle shape length perpendicular to the rectangle shape length of said each cell, and (b) another two cells each sharing one-half of each long wall portion of said each cell, one of said two cells having its rectangle shape length parallel to the rectangle shape length of said each cell and the other of said two cells having its rectangle shape length perpendicular to the rectangle shape length of said each cell.

4,127,692
JIG FOR MASS SOLDERING SYSTEM

Kenneth G. Boynton, Wilton, N.H., assignor to Hollis Engineering, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 469,536, May 13, 1974, Pat. No. 3,973,322. This application Sep. 23, 1974, Ser. No. 508,052
Int. Cl.[2] H05K 3/30; B23K 31/02
U.S. Cl. 428—137 43 Claims



1. A method of treating a perforated circuit board in preparation for mass joining with solder electrical and electronic components by their leads to said board, said board having adjacent at least some of its perforations a metallic pattern to which the component leads can be joined by said solder, said method comprising applying to said board so as to at least partially cover (i) at least some of said perforations and (ii) said metallic pattern, a material which acts as a jig to stabilize said components in position relative to said board, said material being applied in liquid state, said material in solid form being

substantially deformable, compatible with said solder and having a melting point below that of said solder, and at least hardening the material covering said perforations and said metallic pattern whereby to form a meltable, deformable coating compatible with said solder, and forcing said leads into said perforations for a distance sufficient to penetrate the said material covering said perforations so that said material supports said leads relative to said board.

4,127,693

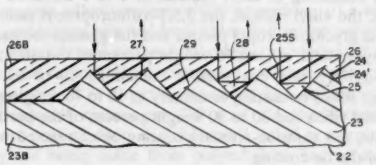
REFLEX REFLECTORS WITH PYRAMID-SHAPED INDENTATIONS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 548,809, Feb. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 320,970, Jan. 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 56,047, Jun. 24, 1970, Pat. No. 3,716,445, which is a continuation of Ser. No. 744,911, Jul. 15, 1968, abandoned, which is a continuation-in-part of Ser. No. 489,654, Sep. 23, 1965, Pat. No. 3,396,639, and a continuation-in-part of Ser. No. 360,954, Jun. 11, 1953, Pat. No. 3,220,871. This application Sep. 2, 1976, Ser. No. 719,808

Int. Cl.[2] B32B *3/28, 3/30*

U.S. Cl. 428—163 **4 Claims**



1. A reflex reflector device comprising:

a base sheet formed of a first flexible plastic resin,

said base sheet having a series of cavities, each of said cavities being shaped to define a corner reflector and having a plurality of planar surfaces defining a pyramid-shaped indentation wherein the base portion of said pyramid-shaped indentation is open to the surface of said base sheet,

and the apex of said pyramid-shaped indentation extending into said base sheet,

and a covering sheet made of a light transmitting second flexible plastic resin which is formed with a series of complementary pyramid-shaped projections having a plurality of complementary planar surfaces,

said covering sheet being disposed onto said first base sheet whereby the complementary pyramid-shaped projections fill the complementary pyramid-shaped indentations in said base sheet in a manner whereby said plurality of planar surfaces of said indentations are contacted by the corresponding complementary planar surfaces of said projections of said covering sheet,

said complementary planar surfaces of said cavities and projections defining at the interface therebetween a discrete reflecting surface so that a beam of light striking said reflecting surface will be reflected from said reflecting surface back in the direction of the source of said light beam,

said base sheet and said covering sheet being made of a respective plastic resin which has different index of refraction so as to retain the reflectivity of the interface surfaces between said first and second sheets.

4,127,694

FABRIC TREATMENT COMPOSITIONS

Alan P. Murphy, Cincinnati, and Fred M. Habermehl, III, Loveland, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 8, 1974, Ser. No. 440,931

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—245 **5 Claims**

1. An article of manufacture adapted for use in an automatic dryer, comprising:

(a) a fabric treating composition consisting essentially of

(i) a static-controlling amount of a hygroscopic surfactant of the formula

$$R—O—(C_2H_4O)_x—C_2H_4OH$$

wherein R is selected from the group consisting of primary, secondary and branched chain alkyl hydrocarbyl moieties; primary, secondary and branched chain alkenyl hydrocarbyl moieties; and primary, secondary and branched chain alkyl- and alkenyl-substituted phenolic hydrocarbyl moieties; said hydrocarbyl moieties having a hydrocarbyl chain length of from about 10 to about 18, and wherein *x* is an integer of from about 35 to about 50, and

(ii) a softening amount of a fabric softener consisting essentially of a transesterified mixture of fatty glycerides containing from about 20% to less than about 30% by weight of soap and having a melting point above about 40° C. and a fatty alcohol having about 10 to about 20 carbon atoms at a weight ratio of glycerides:alcohol of from about 7:3 to about 9:1; and

(b) a flexible substrate in releasable combination with said fabric treating composition.

4,127,695

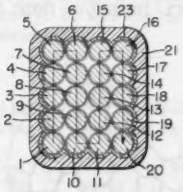
METHOD OF INSULATING ELECTROMAGNETIC COILS

Koichi Hirakawa; Takashi Shibano, both of Kawanishi, and Kazuo Masuda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

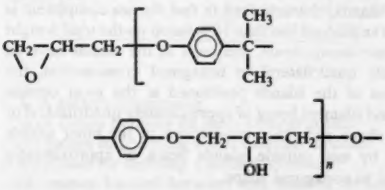
Filed Oct. 7, 1975, Ser. No. 620,265

Int. Cl.[2] B05D *5/12*

U.S. Cl. 428—371 **13 Claims**



1. A method of forming an insulated electromagnetic coil which comprises forming an electromagnetic coil having a bonding layer of an epoxy resin having a melting point higher than 60° C. and consisting essentially of bisphenol A diglycidyl ether of the formula



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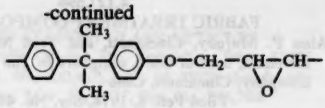
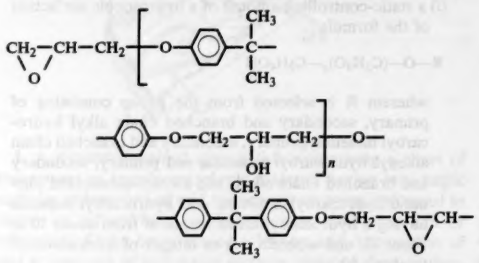


wherein n has a value higher than 1.5 and coating said coil with an epoxy resin consisting of bisphenol A diglycidyl ether of the formula



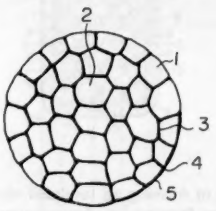
wherein n is from zero to 12 and a cross-linking agent consisting of acid anhydrides and heating said coated coil at a temperature of 150°-250° C. whereby the epoxy resin containing the cross linking agent is cross linked and bridges the coil.

4,127,696

MULTI-CORE COMPOSITE FILAMENTS AND PROCESS FOR PRODUCING SAME

Miyoshi Okamoto, Takatsuki, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 745,161, Nov. 26, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 831,047
Claims priority, application Japan, Jun. 17, 1976, 51-70379
Int. Cl.[2] D01D *7/04;* D02G *3/04*
U.S. Cl. 428—373 **10 Claims**



1. An islands-in-a-sea type multi-core composite filament comprising at least two different polymer components and having a cross-section wherein each island is surrounded by some other islands, characterized in that the sea component is contained in an amount less than 10% based on the total weight of the polymer components, and most of the islands have an approximately quadrilateral to hexagonal cross-section, the cross-sections of the islands positioned at the most outside portion of said filament being of approximately quadrilateral or pentagonal shape and the cross-sections of the inner islands surrounded by said outside islands being of approximately quadrilateral to nonagonal shape.

4,127,697

ABRASION-RESISTANT LENSES AND PROCESS OF MAKING

Bernard L. Laurin, Ludlow, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 717,065, Aug. 24, 1976, Pat. No. 4,064,308, and a continuation-in-part of Ser. No. 578,793, May 19, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 762,088
Int. Cl.[2] G02B *1/10;* G02C *7/02;* B32B *7/02, 27/06*
U.S. Cl. 428—412 **2 Claims**

1. In combination, an ophthalmic lens selected from the group consisting of polycarbonate and poly diethyleneglycol bis allyl carbonate lenses; a tie-coating having the formula $AR_1Si(OR_2)_a(R_3)_b(OH)_c$ wherein A is NH_2, NHR_2 or NHR_1NH_2 when the lens is a polycarbonate and is

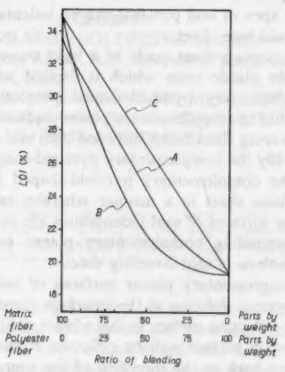
when the lens is a polydiethyleneglycol bis allyl carbonate, R_1 is an alkylene having 2 to 10 carbons, R_2 and R_3 are alkyl having 1 to 4 carbons, a is 0, 1 or 2, b is 0, 1 or 2, c is 1, 2 or 3 and $a+b+c=3$; the tie-coating being reacted through A with the lens; and an abrasion-resistant coating from immersion of the lens with the tie-coating in a pigment free aqueous coating composition comprising a dispersion of colloidal silica in lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, the abrasion-resistant coating being reacted with the OH of the tie-coating.

4,127,698

COMPOSITE FIBER

Shigeo Shimizu, and Akihiko Itoh, both of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 811,326
Claims priority, application Japan, Jul. 7, 1976, 51-79967
Int. Cl.[2] D02G *3/00*
U.S. Cl. 428—373 **6 Claims**



1. A composite fiber comprising:

(A) 90 to 25 parts by weight of a matrix fiber which comprises as main ingredients a chlorine-containing polymer and a partially acetalized polyvinyl alcohol in a ratio of

40:60 to 60:40 by weight, and contains a flame-retarding agent in an amount of 1 to 7% by weight based on the total amounts of the main ingredients, said flame-retarding agent comprising (a) at least one of stannic acid and stannic oxide and (b) at least one of antimonic acid and antimony oxide and the ratio of the ingredient (a) and the ingredient (b) being 15:85 to 50:50 by weight; the chlorine-containing polymer being at least one member selected from the group consisting of homopolymer or copolymer of at least one of vinyl chloride and vinylidene chloride; copolymer of at least one of vinyl chloride and vinylidene chloride, and at least one of acrylonitrile, styrene, vinyl acetate, vinyl propionate and acrylic acid esters; and graft polymer in which at least one of vinyl chloride and vinylidene chloride are grafted onto polyvinyl alcohol or polyvinyl alcohol having sulfonic acid group, and

(B) 10 to 75 parts by weight of at least one fiber selected from the group consisting of polyester fiber, acrylic polymer fiber and cotton fiber.

4,127,699

ELECTRICALLY CONDUCTIVE ADHESIVE

James H. Aumiller, and Judith F. W. Becker, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 689,388, May 24, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,171

Int. Cl.[2] C08K *3/04, 3/08, 3/14*

U.S. Cl. 428—461 **29 Claims**

1. A curable adhesive composition comprising (i) a sulfur-bearing component selected from chlorosulfonated polyethylene and a mixture of a sulfonylchloride with chlorinated polyethylene, said sulfur-bearing component containing about 25 to 70 weight percent of chlorine and about 3 to 160 mmoles of sulfonyl chloride moiety per 100 g of chlorosulfonated or chlorinated polyethylene, said chlorosulfonated or chlorinated polyethylene being made from polyethylene having a melt index of about 4 to 500, (ii) at least one polymerizable vinyl monomer, and (iii) at least one member of the group of conductive particles selected from silver, carbon and titanium carbide in an amount which will produce an electrically conductive adhesive composition when cured.

4,127,700

METALLIC MATERIAL WITH ADDITIVES EMBEDDED THEREIN AND METHOD FOR PRODUCING THE SAME

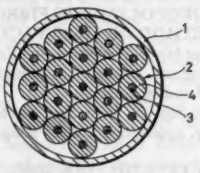
Dieter Stöckel; Friedrich Schneider, and Hermann Heiss, all of Pforzheim, Germany, assignors to G. Rau, Pforzheim, Germany

Filed Oct. 4, 1974, Ser. No. 512,320

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1973, 2351226

Int. Cl.[2] B22F *1/04*

U.S. Cl. 428—558 **10 Claims**



1. An elongate metallic material comprising a matrix metal with additive material embedded therein, said additive material being in powder form, said powder being distributed about a plurality of fiber-like lengths extending along the length of the material. --.

4,127,701

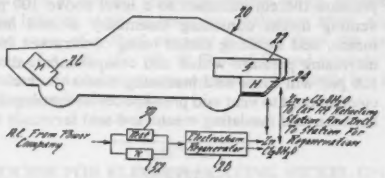
REFUELABLE ELECTRICAL ENERGY STORAGE DEVICE

Philip C. Symons, Birmingham, and Carmelo J. Amato, Livonia, both of Mich., assignors to Energy Development Associates, Madison Heights, Mich.

Continuation of Ser. No. 462,282, Apr. 19, 1974, abandoned, which is a continuation of Ser. No. 200,070, Nov. 18, 1971, abandoned. This application Oct. 6, 1976, Ser. No. 730,288

Int. Cl.[2] H01M *8/06*

U.S. Cl. 429—19 **10 Claims**



second terminals for electrically insulating the two from one another;

(e) said casing, first and second terminal defining means and insulating means together maintaining said compartment in a fluid sealed state so long as the pressure within said compartment is below 100 psi;

(f) means located within said compartment and co-operating with said first and second terminal defining means for producing a voltage across said terminals; and

(g) means for automatically venting said inner compartment to a location outside said compartment in the event the pressure therein increases to a level above 100 psi, said venting means consisting essentially of said insulating means, said insulting means being constructed such that increasing pressure within said compartment, above said 100 psi, will cause said insulating means to crack a sufficient amount to vent said pressure before causing the bond between said insulating means and said terminals to fail.

4,127,703

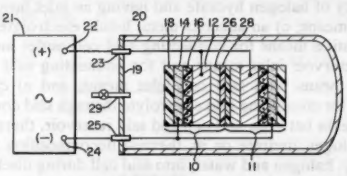
NICKEL-HYDROGEN SECONDARY BATTERY

Gerhard L. Holleck, Wayland, Mass., assignor to EIC Corporation, Newton, Mass.

Continuation of Ser. No. 655,498, Feb. 5, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 894,720

Int. Cl.² H01M *10/34*

U.S. Cl. 429—57 **18 Claims**



1. In a nickel-hydrogen secondary battery comprising a single or multi-cell array with each cell made up of at least a nickel oxi-hydroxide cathode plate, a hydrogen anode plate a separator containing a liquid electrolyte disposed between and extending from the anode plate to the cathode plate, and a hydrogen ambient atmosphere which is accessible to the anode plate, so that said electrolyte provides a conductive path between said cathode and anode plates and energy conversion is effected through charge and discharge in accordance with the simplified reversible overall equation,

$$NiOOH + \tfrac{1}{2} H_2 \rightleftarrows Ni(OH)_2$$

the improvement comprising

means defining an oxygen return path between the ends of each cell to prevent an asymmetric buildup of oxygen produced during charging said oxygen recombining with hydrogen.

4,127,704

CYLINDRICAL ELECTRIC CELL

Rémy Touchard, Poitiers, France, assignor to SAFT - Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Apr. 5, 1978, Ser. No. 893,711

Claims priority, application France, Apr. 18, 1977, 77 11565

Int. Cl.² H01M *4/00*

U.S. Cl. 429—94 **5 Claims**

1. A cylindrical electric cell including at least one cylindrical positive electrode and at least one cylindrical negative electrode disposed in a coaxial bundle, one within the other, at least one of the electrodes being constituted by a plurality of portions of a hollow cylinder each of which has a cross-section in the form of an arc of a circle and which are juxtaposed to obtain a complete cylinder, the cell further including an electrolyte and a separator situated between said electrodes as well as a device intended for maintaining a constant interelectrode distance during electrochemical reactions within the electric cell, said device consisting of substantially inextensible fibres

helically braided to form a cylinder used in conjunction with a spring which maintains this braid under an axially directed force, the braided cylinder being disposed coaxially in contact with a radially extreme electrode of the bundle of electrodes.

4,127,705

ELECTROCHEMICAL STORAGE CELL

Wilfried Fischer, Neckargemund; Herbert Kleinschmager, Eppelheim; Wilhelm Haar, Sandhausen, and Gert Weddigen, Heidelberg-Neuenheim, all of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Fäfertal, Germany

Filed Jul. 20, 1977, Ser. No. 817,379

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1976, 2633454

Int. Cl.² H01M *10/39*

U.S. Cl. 429—104 **9 Claims**

1. In an electrochemical storage cell or battery based on an alkali metal and sulfur having at least one anode chamber and at least one cathode chamber separated from each other by an ion-conducting solid electrolyte, and a felt fabric of a medium with capillary activity contained in the cathode chamber, the improvement which comprises having an additive lowering the viscosity of the sulfur in the cathode chamber and wherein the additive is selenium in an amount of 0.2 to 10 mol % selenium based on the sulfur content.

4,127,706

POROUS FLUOROPOLYMERIC FIBROUS SHEET AND METHOD OF MANUFACTURE

Graham E. Martin; Ian D. Cockshott, and Kevin T. McAloon, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sep. 29, 1975, Ser. No. 617,529

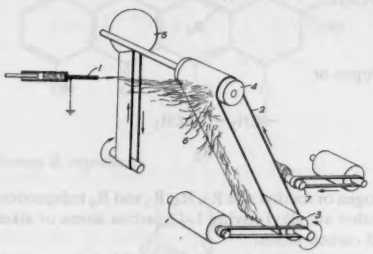
Claims priority, application United Kingdom, Sep. 26, 1974, 41873/74

Int. Cl.² B22D *23/08;* B29D *27/00*

U.S. Cl. 429—122 **17 Claims**

1. A method of preparing a porous polytetrafluoroethylene fibrous sheet suitable for use as a diaphragm is an electrochemical cell which comprises the step of introducing a spinning liquid comprising a dispersion of a polytetrafluoroethylene material and an additional polymeric component which acts to enhance the viscosity of the spinning liquid and serves to

improve its fibre-forming properties into an electric field whereby fibres are drawn from the liquid to an electrode and



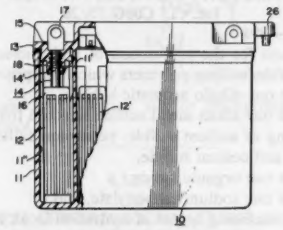
collecting the fibres so produced upon the electrode in the form of a sheet.

4,127,707

STORAGE BATTERY

Tokuji Ohya, and Toshihiro Isoi, both of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Takatsuki, Japan

Filed Nov. 15, 1977, Ser. No. 851,772
Claims priority, application Japan, Sep. 24, 1977, 52/114895
Int. Cl.[2] H01M *2/30*
U.S. Cl. 429—149 **3 Claims**



1. A storage battery, comprising, a container of synthetic resin material, said container having at least one partition wall dividing it into at least a pair of cells, positive and negative battery plate groups located in said cells, a cover of synthetic resin material enclosing said cells, said cover having openings therein overlying said cells, terminal posts connected to said plate groups extending outwardly through said openings, portions of synthetic resin material surrounding said posts and being positively secured thereto, said portions each including a dish-shaped element having an upwardly open cavity surrounding each of said openings, an upper surface of each said cavity being heat sealed to a lower surface of said cover, whereby said cavity of each said dish-shaped element receives a portion of synthetic resin material upon heat sealing said surfaces together, the battery thereby being rendered substantially leak proof, ribs provided on confronting inner surfaces of said cells, said ribs having recesses at upper ends thereof, and opposed projections provided on said portions for the reception in said recesses to facilitate a positive setting of said posts in said cells.

4,127,708

SOLID STATE CELL WITH HALOGEN-CHALCOGEN-METAL SOLID CATHODE

Charles C. Liang, Andover; Ashok V. Joshi, Burlington, and Luverne H. Barnette, Medford, all of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Aug. 5, 1977, Ser. No. 821,885
Int. Cl.[2] H01M *6/18*
U.S. Cl. 429—191 **16 Claims**

1. A solid state electrochemical cell comprising a solid anode, a solid electrolyte and a cathode comprising a compound which is solid at ambient temperatures and which contains at least one halogen atom, at least one chalcogen atom, and at least one atom of a third element selected from the group consisting of As, Bi, Mo, Nb, P, Sb, and Se and wherein said halogen and said chalcogen are separately identifiable in a state other than a radical grouping.

4,127,709

PROCESS FOR ELECTRO-PLATING NICKEL ON TITANIUM

Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y. 10804

Filed Aug. 24, 1977, Ser. No. 827,134
Int. Cl.[2] C25D *5/42;* H01M *4/16*
U.S. Cl. 429—245 **8 Claims**

1. A process for electro-plating nickel on titanium which comprises connecting titanium as the cathode in an acid electrolyte capable of forming a layer of titanium hydride on the titanium and forming a layer of titanium hydride on said titanium; and thereafter immersing the hydrided titanium in a nickel plating solution and cathodically plating nickel thereover.

7. As an article of manufacture a grid support for a cathodic reactant for lead-sulfuric acid storage battery cells made according to the process described in claim 1.

4,127,710

COPOLYMERIZATION OF A 1,3-CYCLODIENE AND A LINEAR CONJUGATED DIENE

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 2, 1974, Ser. No. 511,561
Int. Cl.[2] C08F *4/70, 32/06*
U.S. Cl. 526—133 **10 Claims**

1. A method comprising:

copolymerizing a 1,3-cyclodiene comonomer and a linear conjugated diene comonomer in the presence of a catalyst formed from a mixture comprising

(a) a triorganoaluminum compound represented by the general formula $R_3''Al$ wherein R'' is a hydrocarbon radical containing from 1 to 20 carbon atoms selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and mixtures thereof;

(b) a nickel (II) compound; and

(c) a Friedel-Crafts type Lewis acid cocatalyst wherein the amount of the triorganoaluminum compound is in the range of from about 0.5 to 30 moles per mole of the nickel (II) compound, the amount of the Friedel-Crafts type cocatalyst is in the range of from about 0.5 to 30 moles per mole of the nickel (II) compound, and the amount of nickel (II) compound is in the range of from about 0.05 to 50 millimoles per hundred grams of total comonomer.

4,127,711

FLUORINE-CONTAINING TERPOLYMERS

Albert L. Lore, and Stuart Raynolds, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1977, Ser. No. 783,456
Int. Cl.[2] C08F *214/18*
U.S. Cl. 526—245 **13 Claims**

1. A terpolymer comprising the following components:

(i) from 55 to 80 percent by weight of polymerized perfluoroaliphatic monomer of the formula

$$R_fQO_2CC(R)=CH_2$$

wherein
R_f is a straight or branched-chain perfluoroalkyl group containing from 2 to 20 carbon atoms,
R is H or CH_3
Q is alkylene of 1 to 15 carbon atoms, hydroxyalkylene of 3 to 15 carbon atoms, $-C_nH_{2n}(OC_qH_{2q})_m-$, $-SO_2NR^1(C_nH_{2n})-$ or $-CONR^1(C_nH_{2n})-$,
R^1 is H or C_{1-4}alkyl,
n is 1 to 15,
q is 2 to 4, and
m is 1 to 15;
(ii) from 15 to 35 percent by weight of polymerized nonfluorinated polyethylene oxide acrylate or methacrylate monomer of the formula

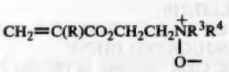
$$R^2(OCH_2CH_2)_pO_2CC(R)=CH_2$$

wherein
R^2 is C_{1-18}alkyl, aryl or alkaryl containing 7 to 24 carbon atoms,
R is H or CH_3,
p is 10 to 50; and
(iii) from 1 to 15 percent by weight of polymerized nonfluorinated monomer selected from the group

$$CH_2=C(R)CO_2CH_2CH_2NR^3R^4,$$

$$(CH_2=C(R)CO_2CH_2CH_2{}^+NR^3R^4R^5)_yX^{-y},$$

and



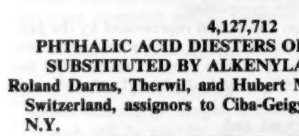
wherein
R is H or CH_3,
R^3 and R^4 are C_{1-4}alkyl,
R^5 is H or C_{1-4}alkyl, and
X is an anion of valence y.

4,127,712
PHTHALIC ACID DIESTERS OR ESTER-AMIDES SUBSTITUTED BY ALKENYLAMINO GROUPS

Roland Darms, Therwil, and Hubert Meindl, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,164
Claims priority, application Switzerland, Dec. 14, 1976, 15703/76
Int. Cl.[2] C08F *218/14, 222/22, 226/06;* **C07C** *101/66*
U.S. Cl. 526—258 **11 Claims**

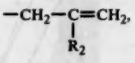
1. A phthalic acid diester or ester-amide of the formula I



(I)

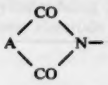
in which one of Q_1 and Q_2 is $-OR_3$ and the other is $-OR_4$ or

R_1 is hydrogen or



R_2 is hydrogen or methyl and R_3, R_4, R_5 and R_6 independently of one another are alkyl having 1–12 carbon atoms or alkenyl having 2–5 carbon atoms.

5. A hot-curable mixture which is stable on storage and contains (a) at least one phthalic acid diester or one phthalic acid ester-amide of the formula I according to claim 1, (b) at least one polyimide which has, per molecule, at least two radicals of the formula XI



(XI)

in which A is a divalent radical containing a carbon-carbon double bond, and, if appropriate, (c) a polymerization initiator.

4,127,713
AROMATIC SULFIDE/SULFONE POLYMER PRODUCTION

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 14, 1977, Ser. No. 851,329
Int. Cl.[2] C08G *75/20*
U.S. Cl. 528—391 **7 Claims**

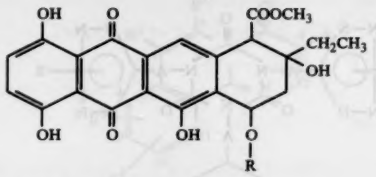
1. A process for the production of high molecular weight aromatic sulfide/sulfone polymers which comprises contacting
(a) at least one dihalo aromatic sulfone,
(b) at least one alkali metal sulfide selected from the group consisting of sodium sulfide, potassium sulfide, rubidium sulfide, and cesium sulfide,
(c) at least one organic amide,
(d) at least one sodium carboxylate, and
(e) water, including water of hydration in an amount of at least about 3.5 moles per mole of alkali metal sulfide, under polymerization conditions for a period of time, and proportions of reactants sufficient to cause the reactants to react and form a high molecular weight aromatic sulfide/-sulfone polymer.

4,127,714
ANTHRACYCLINE GLYCOSIDES

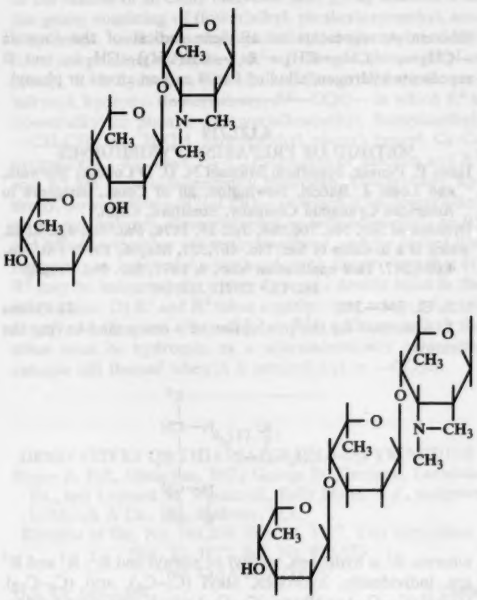
Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Masa Hamada, Hoya; Masaaki Ishizuka; Hiroshi Naganawa, both of Tokyo; Toshikazu Oki, Kamakura, and Taiji Inui, Chigasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Aug. 9, 1977, Ser. No. 823,052
Claims priority, application Japan, Aug. 16, 1976, 51-98113
Int. Cl.[2] C07H *15/24*
U.S. Cl. 536—17 **7 Claims**

1. An anthracycline glycoside of the general formula



wherein R represents



or a non-toxic acid addition salt or deoxyribonucleic acid complex thereof.

4,127,715

VARIOUS

1,5,10,11-TETRAHYDROBENZO[4,5]CYCLOHEPTA[1,2-B]PYRAZOLO-[4,3-E]PYRIDINE DERIVATIVES

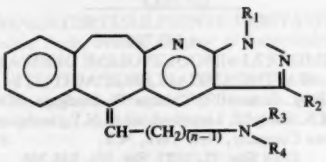
Hans Hoehn, Tegernheim, Germany; Jack Bernstein, New Brunswick, N.J., and Berthold R. Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 781,619, Mar. 28, 1977, Pat. No. 4,087,433, which is a division of Ser. No. 698,992, Jun. 23, 1976, Pat. No. 4,033,970. This application Feb. 27, 1978, Ser. No. 881,470

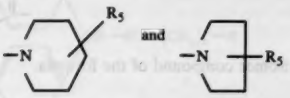
Int. Cl.[2] C07D *471/04*

U.S. Cl. 542—404 **3 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl of 1 to 4 carbons, phenyl, benzyl, or phenethyl; R_2 is hydrogen, lower alkyl of 1 to 4 carbons, or phenyl; R_3 and R_4 taken together with the N-atom form a heterocyclic ring selected from the group consisting of



wherein R_5 is hydrogen, lower alkyl of 1 to 4 carbons, or lower alkoxy of 1 to 4 carbons; n is an integer from 3 to 6; and a pharmaceuticaly acceptable acid addition salt thereof.

4,127,716

3-HETEROTHIOMETHYL UREIDO CEPHALOSPORINS

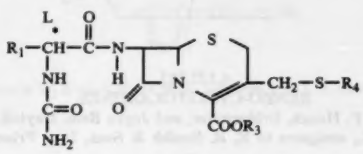
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 664,796, Mar. 8, 1976, Pat. No. 4,088,816, and a continutation-in-part of Ser. No. 664,796, Mar. 8, 1976, Pat. No. 4,088,815, which is a continuation-in-part of Ser. No. 507,900, Sep. 20, 1974, abandoned, said Ser. No. 664,795, is a continutation-in-part of Ser. No. 507,906, Sep. 20, 1974, abandoned. This application Feb. 2, 1977, Ser. No. 764,134 The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.

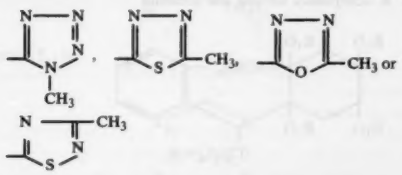
Int. Cl.[2] C07D *501/56, 501/54;* **A61K** *31/545*

U.S. Cl. 544—27 **28 Claims**

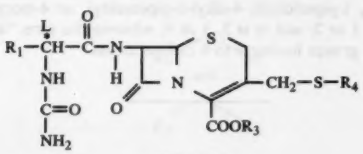
1. An L-isomer compound of the formula:



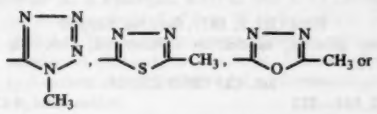
wherein R_1 is 2-thienyl or 3-thienyl; R_3 is hydrogen, sodium or potassium; and R_4 is



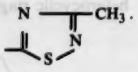
2. An L-isomer compound of the formula:



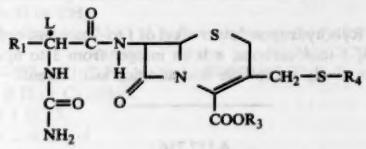
wherein R_1 is 2-furyl or 3-furyl; R_3 is hydrogen, sodium or potassium; and R_4 is



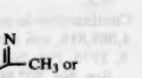
-continued



3. An L-isomer compound of the formula:



wherein R_1 is phenyl; R_3 is hydrogen, sodium or potassium; and R_4 is



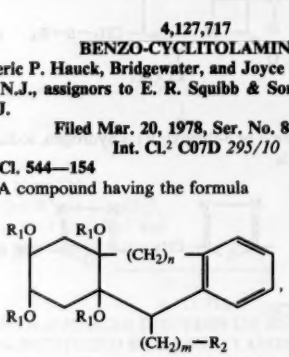
4,127,717

BENZO-CYCLITOLAMINES

Frederic P. Hauck, Bridgewater, and Joyce Reid, Dayton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 20, 1978, Ser. No. 888,128
Int. Cl.² C07D *295/10*
U.S. Cl. 544—154 **10 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein R_1 is alkanoyl having 2 to 7 carbon atoms; R_2 is dialkylamino, 1-pyrrolidinyl, 1-piperidinyl, 4-alkyl-1-piperazinyl, or 4-morpholinyl; *n* is 1 or 2; and *m* is 2, 3 or 4; wherein the term "alkyl" refers to groups having 1 to 6 carbon atoms.

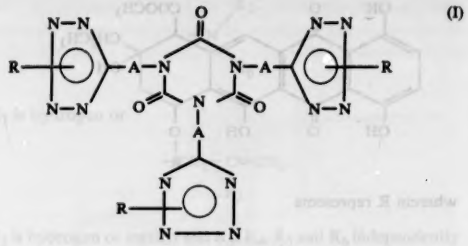
4,127,718

TRIS-TETRAZOLES AS CHEMICAL BLOWING AGENTS

Hugo Illy, Reinach, and Werner Fussenegger, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 5, 1977, Ser. No. 839,679
Claims priority, application Switzerland, Oct. 18, 1976, 13163/76
Int. Cl.² C07D *251/04*
U.S. Cl. 544—222 **4 Claims**

1. A tris-tetrazole of the formula I



(I)

wherein A represents an alkylene radical of the formula $—CH_2—$, $—CH_2—CH_2—$ or $—CH(CH_3)—CH_2—$, and R represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl.

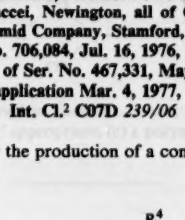
4,127,719

METHOD OF PREPARING PYRIMIDINES

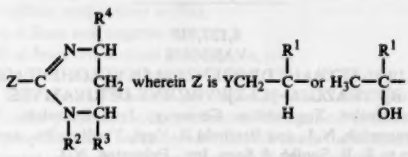
Hans P. Panzer, Stamford; Michael N. D. O'Connor, Norwalk, and Louis J. Baccei, Newington, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 706,084, Jul. 16, 1976, Pat. No. 4,039,542, which is a division of Ser. No. 467,331, May 6, 1974, Pat. No. 4,006,247. This application Mar. 4, 1977, Ser. No. 774,307
Int. Cl.² C07D *239/06*
U.S. Cl. 544—242 **12 Claims**

1. A method for the production of a compound having the formula



wherein R^1 is hydrogen, methyl or phenyl and R^2, R^3 and R^4 are, individually, hydrogen, alkyl (C_1–C_4), aryl (C_6–C_{10}), aralkyl (C_7–C_{11}) or alkaryl (C_7–C_{11}) which comprises heating, to a temperature ranging from about 275° C., to about 500° C., a starting compound having the formula



Y being hydroxyl or RO, wherein R is alkyl (C_1–C_{10}), aryl (C_6–C_{10}) or aralkyl (C_7–C_{11}) and R^1, R^2, R^3 and R^4 are as described above, in the presence of a heterogeneous vapor phase catalyst and up to about 30%, by weight, based on the weight of said starting compound, of water and recovering the resultant compound.

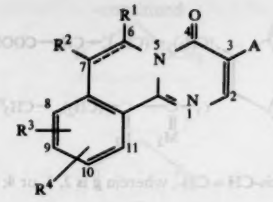
4,127,720

PYRIMIDO[2,1-a]ISOQUINOLINE DERIVATIVES HAVING ANTIALLERGY ACTIVITY

Peter F. Juby, Jamesville; Thomas W. Hudyma, Manlius, and Richard A. Partyka, Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,266
Int. Cl.² C07D *471/14, 471/22;* A61K *31/505*
U.S. Cl. 544—252 **76 Claims**

1. A compound of the formula



wherein A is tetrazol-5-yl or $—CO_2R^5$ in which R^5 is hydrogen or the residue of an easily cleavable ester group selected from the group consisting of (lower)alkyl, pivaloyloxymethyl, acetoxymethyl, methoxymethyl, phthalidyl, 1-glyceryl and di(-lower)alkylamino(lower)alkyl, R^1 is hydrogen, (lower)alkyl or phenyl, R^2 is hydrogen, (lower)alkyl, (lower)alkenyl, (lower-)alkynyl, hydroxy, (lower)alkoxy, R^6—COO— in which R^6 is (lower(alkyl or phenyl, di(lower)alkoxyethyl, formylmethyl, $—CH_2CH(OH)CH_2OH$, hydroxyethyl, phenyl, benzyl, C_3–C_6 cycloalkyl-C_1–C_2 alkyl, C_5–C_6 cycloalkyl or halogen and R^3 and R^4 are each independently hydrogen, (lower)alkyl, hydroxy, (lower)alkoxy, R^6—COO— in which R^6 is (lower)alkyl or phenyl, halogen, (lower)alkenyl or trifluoromethyl, or R^3 and R^4 taken together are methylenedioxy, and the dashed line represents an optional double bond, with the privisos that (1) R^2 may be halogen only where there is a double bond in the 6,7-position, (2) R^3 and R^4 taken together may not be adjacent t-butyl and (3) when either of R^3 or R^4 is trifluoromethyl, the other must be hydrogen; or a pharmaceutically acceptable cationic salt thereof when A is tetrazol-5-yl or $—CO_2H$.

4,127,721

DERIVATIVES OF THIADIAZOLO[3,4-D]PYRIMIDINE

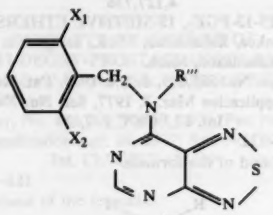
Roger J. Tull, Metuchen, N.J.; George D. Hartman, Lansdale, Pa., and Leonard M. Weinstock, Belle Mead, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 768,235, Feb. 14, 1977. This application Nov. 21, 1977, Ser. No. 853,153

Int. Cl.² C07D *239/70*

U.S. Cl. 544—254 **1 Claim**

1. The compound having the structure:



wherein X_1 and X_2 are independently fluorine or chlorine and R''' is H or CHO.

4,127,722

BENZHYDRYLSULPHINYL DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

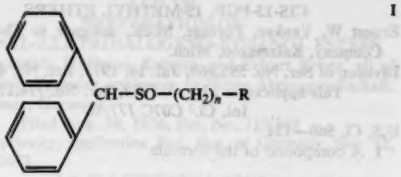
Division of Ser. No. 728,054, Sep. 30, 1976, Pat. No. 4,066,686. This application Aug. 3, 1977, Ser. No. 821,312

Claims priority, application United Kingdom, Oct. 2, 1975, 40419/75

Int. Cl.² C07D *233/22*

U.S. Cl. 548—353 **2 Claims**

1. A benzhydrylsulphinyl compound of the formula:



I

in which *n* is 1, 2 or 3 and R is 2-imidazolin-2-yl and the non-toxic acid addition salts.

4,127,723

11-DEOXY-CIS-13-PGE$_1$, 15-METHYL ETHERS

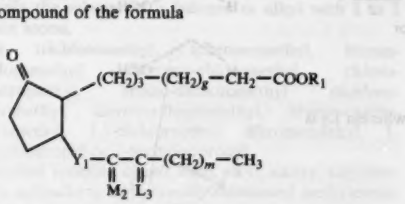
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,176

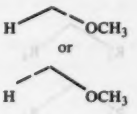
Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **7 Claims**

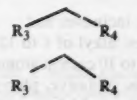
1. A compound of the formula



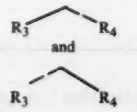
wherein Y_1 is cis-CH=CH—; wherein *g* is 2, 3, or 4; wherein M_2 is



wherein L_3 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

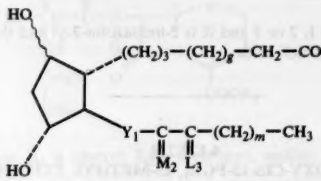
4,127,724

CIS-13-PGF$_1$ 15-METHYL ETHERS

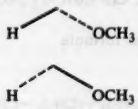
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,179
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula

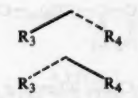


wherein Y is cis-CH=CH—; wherein g is 2, 3, or 4;
wherein M_2 is



or

wherein L_3 is



or a mixture of

and

wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of 1 to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

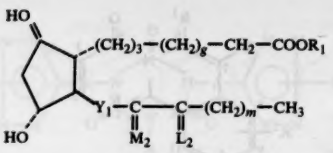
4,127,725

CIS-13-PGE$_1$, 15-METHYL ESTERS

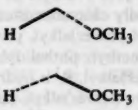
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,180
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula

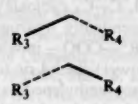


wherein Y is cis-CH=CH-; wherein g is 2, 3, or 4; wherein M_2 is

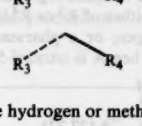


or

wherein L_3 is



or a mixture of



and

wherein R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein m is one to 5, inclusive; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

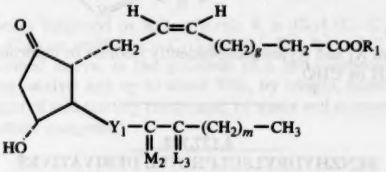
4,127,726

CIS-13-PGE$_2$, 15 METHYL ETHERS

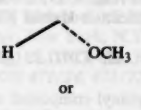
Ernest W. Yankee, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 4, 1975, Pat. No. 4,026,909.
This application Mar. 3, 1977, Ser. No. 774,184
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula

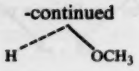


wherein Y is cis-CH=CH-; wherein g is 2, 3, or 4; wherein M_2 is

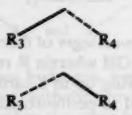


or

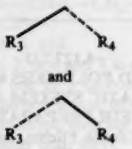
-continued



wherein L_3 is



or a mixture of



wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein m is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,127,727

DEPENTYL ANALOGUES OF 11-DEOXY-PROSTAGLANDIN E_2

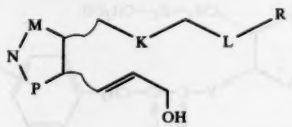
Harold C. Kluender, Madison, Wis., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 684,569, Feb. 9, 1977, Pat. No. 4,065,493. This application Apr. 14, 1977, Ser. No. 787,478

Int. Cl.² C07C *177/00*

U.S. Cl. 560—121 **2 Claims**

1. A compound of the formula,



wherein:

L is methylene, ethylene, or trimethylene;

K is cis-vinylene;

M is carbonyl;

N is methylene;

P is methylene; and

R is carboxyl; alkoxycarbonyl, the alkyl porton of said alkoxycarbonyl being a lower alkyl radical; or a pharmacologically acceptable non-toxic carboxyl salt.

4,127,728

PREPARATION OF 1-PHENYL-2,2,2-TRIHALOGENO-ETHANOL ESTERS

Thomas Schmidt; Wolfgang Kramer, and Eckart Kranz, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

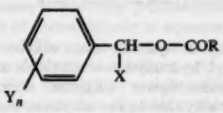
Filed Aug. 24, 1976, Ser. No. 717,302

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1975, 2540653

Int. Cl.² C07C *67/14, 67/08*

U.S. Cl. 560—124 **10 Claims**

1. A process for the preparation of a 1-phenyl-2,2,2-trihaloethanol ester of the formula



in which

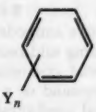
R is alkyl, halogenoalkyl, alkoxy, cycloalkyl, or optionally substituted phenyl, benzyl, phenoxy or phenylsulfonyl wherein the substituent is halogen or alkyl with 1 to 2 carbon atoms,

X is trichloromethyl, tribromomethyl, bromo-dichloromethyl, dibromo-chloromethyl, chloro-difluoromethyl, bromo-difluoromethyl, dichloro-fluoromethyl, dibromo-fluoromethyl, bromo-chloro-fluoromethyl, 1,1-dichloroethyl, dibromomethyl, 1-chloroisopropyl or 1-bromoisopropyl,

Y is chlorine, bromine, cyano, nitro, alkyl, alkoxy, alkylmercapto, sulfoalkoxy or optionally substituted methylenedioxy, and

n is an integer from 0 to 3,

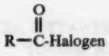
comprising reacting about 1 to 2 molar amounts of a compound of the formula



with about 1 molar amount of a halogenated aldehyde of the formula

X CHO

in the presence of about 1 molar amount of a metal halide Friedel-Crafts catalyst at a temperature of about −70 to +100° C thereby to form a complex alcoholate of said catalyst, and reacting the complex alcoholate with about 0.8 to 1.2 molar amounts of an acid halide of the formula



or with a corresponding acid anhydride at a temperature of about −70 to +100° C.

4,127,729

AMINO ACID DERIVATIVES

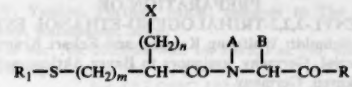
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 747,282, Dec. 3, 1976, Pat. No. 4,091,024. This application Feb. 21, 1978, Ser. No. 879,409

Int. Cl.² C07C *149/23, 153/07*

U.S. Cl. 560—147 **10 Claims**

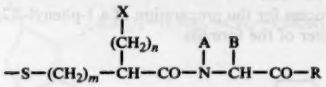
1. A compound of the formula



and salts thereof,

wherein R is hydroxy or lower alkoxy;

R_1 is hydrogen, lower alkanoyl, benzoyl or



A is hydrogen, lower alkyl or hydroxy-lower alkylene;

B is hydrogen, lower alkyl, hydroxy-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylthio-lower alkylene, carbamoyl-lower alkylene or carboxy-lower alkylene;

X is carboxy, lower alkoxycarbonyl, carbamoyl, N-substituted carbamoyl wherein the N-substituent is lower alkyl or phenyl-lower alkylene, or cyano;

m is 0 or 1; and

n is 0, 1,2,3 or 4.

4,127,730

METHOD OF PREPARING POLYMERS ANALOGOUS TO ENZYMES

Günter Wulff, Bonn, and Ali Sarhan, Ollheim, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 568,639, Apr. 16, 1975, which is a continuation-in-part of Ser. No. 390,824, Aug. 23, 1973. This application Mar. 10, 1978, Ser. No. 885,235

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1972, 2242796

Int. Cl.[2] C08V *9/26*

U.S. Cl. 560—186 **5 Claims**

1. A method of separating an optically active antipode from a racemate thereof which comprises contacting said racemate with a three-dimensional polymeric material comprising a polymer of an olefinically unsaturated compound or a polycondensation polymer having in its physical configuration a void whose size and shape and the arrangement of the functional groups therein correspond to the size and shape and the arrangement of the functional groups of an optically active compound, said polymeric material being operative to preferentially sorb an optically active compound whose size and shape correspond to said void when a racemate mixture thereof is passed over the three-dimensional polymeric material wherein the void of such polymeric material corresponds to the size and shape of the optically active antipode to be separated from said racemate.

4,127,731

PROCESS FOR PRODUCING FLUORINATED ACYL FLUORIDE HAVING AN ESTER GROUP

Masaaki Yamabe, Machida; Seiji Munekata; Yoshio Sugaya, both of Yokohama, and Yukio Jitsugiri, Yokosuka, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 8, 1976, Ser. No. 739,727

Claims priority, application Japan, Nov. 11, 1975, 50-134718

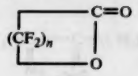
Int. Cl.[2] C07C *69/63*

U.S. Cl. 560—192 **5 Claims**

1. A process for producing a fluorinated acyl fluoride having an ester group which has the formula

$$FOC(CF_2)_{n-1}CO_2R$$

wherein *n* represents an integer of from 2 to 4 and R represents an alcohol residual group which comprises reacting under substantially anhydrous conditions a perfluorolactone having the formula



wherein *n* represents an integer of from 2 to 4 with an alcohol having the formula ROH wherein R represents an alkyl, aralkyl or aryl group having up to 8 carbon atoms, wherein the molar ratio of alcohol to perfluorolactone is less than 2, and wherein the perfluorolactone and/or the alcohol are respectively diluted with anhydrous inert organic solvent before the reaction.

4,127,732

MONOMERS AND POLYMERS CONTAINING THE REACTIVE AROMATIC SYSTEM AND METHOD FOR THEIR PREPARATION

Miroslav Bleha, and Zdeněk Plichta, both of Praha, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

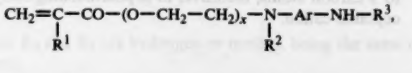
Filed Oct. 23, 1975, Ser. No. 625,317

Claims priority, application Czechoslovakia, Oct. 30, 1974, 7412-74; Oct. 30, 1974, 7413-74; Oct. 30, 1974, 7414-74

Int. Cl.[2] C07C *69/54*

U.S. Cl. 560—221 **11 Claims**

1. An acrylate ester having the general formula:



where

R^1 is hydrogen or a CH_3 group,

R^2 is an alkyl group containing 1 to 6 carbon atoms,

R^3 is an acetyl, sulfate or hydrochloride group,

Ar is p-phenylene, and

x is 1 to 4.

4,127,733

2-DECARBOXY-2-HYDROXYMETHYL-17-PHENYL-11-DEOXY-PGF$_1$ ANALOGS

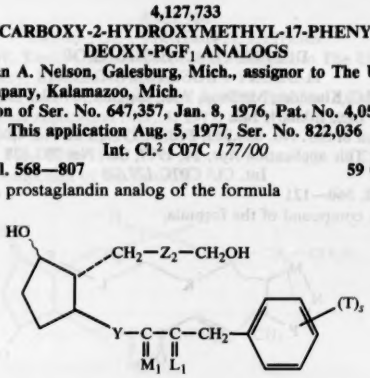
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 647,357, Jan. 8, 1976, Pat. No. 4,055,602. This application Aug. 5, 1977, Ser. No. 822,036

Int. Cl.[2] C07C *177/00*

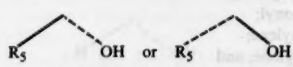
U.S. Cl. 568—807 **59 Claims**

1. A prostaglandin analog of the formula



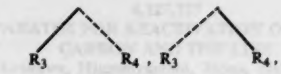
wherein Y is trans—CH=CH—;

wherein M_1 is

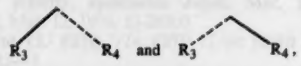


wherein R_5 is hydrogen or methyl;

wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;
wherein Z_2 is
cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—;
cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—; or
—$(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein *g* is one, 2, or 3; and
wherein *s* is zero, one, 2, or 3 and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl.

4,127,734

PREPARATION OF BUTYNEDIOL USING BISMUTH MODIFIED SPHEROIDAL MALACHITE

Joseph M. Fremont, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1978, Ser. No. 870,023
Int. Cl.² C07C *29/00*
U.S. Cl. 568—855 **2 Claims**

1. In the production of 1,4-butynediol by reacting acetylene and formaldehyde in the presence of a copper acetylide catalyst, the improvement of using as a catalyst a complex produced by converting spheroidal agglomerates of basic copper carbonate crystals, at least about 80% of the agglomerates being 5 to 12 microns in the longest dimension, the agglomerates containing 1 to 4% by weight of bismuth oxycarbonate, to copper acetylide complex by slurrying the agglomerates in water and subjecting them to the action of formaldehyde and acetylene, the agglomerates produced

(a) forming amorphous gel-like hydrated copper carbonate by bringing together, in aqueous solution, with mixing, at a temperature less than about 55° C., enough of
(1) a cupric salt,
(2) a bismuth salt, and
(3) an alkali metal carbonate or an alkali metal bicarbonate, to yield a mixture with a pH value of 5.5 to 7.5; and then

(b) holding the mixture of (a), without agitation, at a temperature less than about 55° C. until the agglomerates are formed.

4,127,735

PREPARATION OF DICHLOROPHENE

Adolf Staffe, Leverkusen; Klaus-Friedrich Lehment, Odenthal, and Wilhelm Backhaus, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 1, 1976, Ser. No. 737,746
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1975, 2551498
Int. Cl.² C07C *37/00, 37/20, 39/16*
U.S. Cl. 568—726 **13 Claims**

1. A process for the preparation of dichlorophene which comprises contacting p-chlorophenol with a stoichiometric excess of formaldehyde in aqueous sulfuric acid in substantial absence of oxygen, at a reaction temperature of 45° to 75° C., by introducing into a sulfuric acid reaction mixture containing 40 to 70% strength by weight sulfuric acid 1 to 6% by weight of the total amount of p-chlorophenol to be reacted and thereafter adding formaldehyde and additional p-chlorophenol to the reaction mixture in amounts such that at the end of the p-chlorophenol addition only 85 to 98% by weight of the total amount of formaldehyde has been added and thereafter adding the remaining formaldehyde.

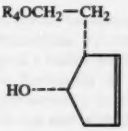
4,127,736

2-HYDROXYETHYL-3-CYCLOPENTEN-1-OLS AND DERIVATIVES THEREOF

Naresh K. Chadha, Nutley; John J. Partridge, Jr., and Milan R. Uskokovic, both of Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 623,205, Oct. 16, 1975, abandoned, which is a division of Ser. No. 434,539, Jan. 18, 1974, Pat. No. 3,933,829, which is a continuation-in-part of Ser. No. 331,931, Feb. 12, 1973, abandoned. This application Sep. 19, 1977, Ser. No. 834,217
Int. Cl.² C07C *35/06, 69/16, 69/76*
U.S. Cl. 568—838 **2 Claims**

1. An optically active compound of the formula:



wherein —OR_4 forms hydroxy or an ester protecting group convertible to hydroxy by hydrolysis; or its optically active antipode or racemate thereof.

4,127,737
APPARATUS FOR REACTIVATION OF ACTIVE CARBON AND THE LIKE

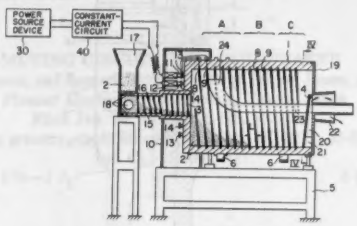
Kazusa Hirakawa, Higashiyamato, Japan, assignor to Accord Mech. Kabushiki Kaisha, Japan

Filed Mar. 3, 1977, Ser. No. 774,121

Claims priority, application Japan, Mar. 5, 1976, 51-26221[U]; Mar. 12, 1976, 51-26803

Int. Cl.[2] F27B *7/14;* F27D *11/04;* H05B *3/60*

U.S. Cl. 13—7 **8 Claims**



1. Apparatus for reactivation of a material, comprising: a hollow cylindrical drum made of heat-resistant material and supported rotatably about the centerline axis thereof, said drum having an inlet at one end thereof for feeding said material thereinto and an outlet at the other end thereof for discharging said material after reactivation therefrom; motive power means for driving the drum in rotation about said axis; helical electrodes of mutually different polarity disposed in mutually interposed helical state with a constant spacing therebetween around and along substantially the entire inner wall surface of the drum and fixed to said surface, said electrodes functioning upon rotation of the drum to propel by screw action the material from said inlet to said outlet; and means for supplying electric power to said electodes for causing electric discharge therebetween and conduction through the material being thus propelled thereby to subject the material sequentially to drying, firing, and reactivation as a result of electric discharge effect and the resulting joule heat.

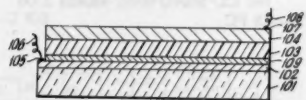
4,127,738
PHOTOVOLTAIC DEVICE CONTAINING AN ORGANIC LAYER

Amal K. Ghosh, New Providence, and Tom Feng, Morris Plains, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 702,747, Jul. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 564,438, Apr. 2, 1975, abandoned. This application Apr. 20, 1977, Ser. No. 789,183

Int. Cl.[2] H01L *31/04, 31/06*

U.S. Cl. 136—89 NB **19 Claims**



1. A photovoltaic device for the conversion of light to electrical current comprising:

(a) a first electrode and a second electrode, said first electrode comprising an element having a work function greater than that of aluminum and said second electrode comprising an element having a work function equal to or less than that of aluminum and at least one of said first and second electrodes being substantially transparent to said light, said element of said first electrode and said element of said second electrode being: (1) non-gaseous at 20° to 100° C. and atmospheric pressure, (2) nonradioactive, (3) not explosively reactive with water, and (4) electrically conductive; and

(b) an organic layer between said first and said second electrodes, one surface of such layer being in Schottky barrier contact with said second electrode and the other surface of such organic layer being in ohmic contact with said first electrode, said organic layer comprising at least one organic compound selected from organic compounds which have the capacity to sensitize or de-sensitize a material selected from the group consisting of silver halides, titanium dioxide, zinc oxide, cadmium sulfide, selenium and polyvinylcarbazole; and

(c) an insulating layer interposed between said organic layer and said second electrode, said insulating layer comprising an electrically nonconducting oxide.

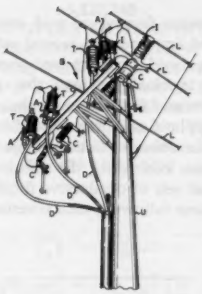
4,127,739
LEVEL MOUNT ELECTRICAL COMPONENT BRACKET

Marion R. Farmer, Germantown, Tenn., assignor to Aluma-Form Inc., Memphis, Tenn.

Filed Feb. 10, 1977, Ser. No. 767,292

Int. Cl.[2] H02G *7/20*

U.S. Cl. 174—45 R **27 Claims**



1. A three phase bracket for mounting electrical components in the category of terminations, cutouts, arrestors, or the like, all at the same level upon a utility pole, comprising a crossarm capable of attachment forwardly of a pole and capable of extending some distance laterally to either of its sides, insulative supports secured at one end with the crossarm and capable of attaching with a pole at their other ends, said supports comprising pairs of braces with one pair of said braces arranged as tensioned braces extending approximately forwardly horizontally from the crossarm, with the other pair of said braces being arranged as compression braces and extending downwardly at an angle with respect to the said crossarm, a series of mounting means secured with the crossarm, each mounting means comprising at least one angle member having a pair of flanges, one flange connected to a side of the crossarm, the other flange extending from the crossarm, each extending flange of the series of mounting means being arranged on the same horizontal plane to provide for a level disposition of any electrical component mounted upon the said bracket.

4,127,740
ROUTING ARRANGEMENT FOR GROUND CONDUCTORS IN PRINTED CIRCUIT STRUCTURES

Frederick W. LaMarche, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

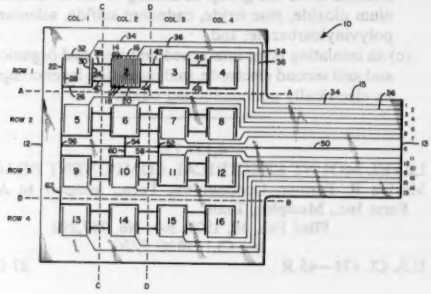
Filed Aug. 17, 1977, Ser. No. 825,204

Int. Cl.[2] H05K *1/00*

U.S. Cl. 174—68.5 **5 Claims**

1. A printed circuit board for use in diaphragm-type electrical switch panels comprising:

(a) an insulating substrate having formed thereon at predetermined coordinate locations of rows and columns on a first area a pattern of first and second sets of conductive fingers, the fingers in each set being conductively connected one with the other in that set and interleaved in a noncontact relationship with the fingers on the other set, said substrate having a second area terminating at a single edge along which plural terminal positions are established; and



(b) conductor means formed on said insulating substrate connecting said first and said second sets of conductive fingers at each of said predetermined coordinate locations to said plural terminal positions, the conductor means being routed on said first area such that severing of said substrate along plural axes between said rows and columns in said first area does not destroy the continuity of said conductor means connecting the remaining ones of said first and second sets of conductive fingers to said plural terminal positions following such severing.

4,127,741

ARRANGEMENT FOR ELASTICALLY CLAMPING GLASS FIBRE RODS

Ewald Bauer, Wunsiedel, and Martin Kreuzer, Mittelweissenbach, both of Germany, assignors to Rosenthal Technik AG, Germany

Filed Mar. 31, 1977, Ser. No. 783,393

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613682

Int. Cl.[2] H01B *17/38;* F16B *4/00*

U.S. Cl. 174—189 **21 Claims**

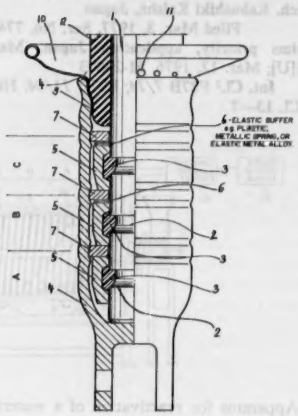
1. An arrangement for fixing a sheath comprised of a material of one coefficient of expansion on a glass fibre reinforced plastic rod of a different coefficient of expansion, said arrangement comprising:

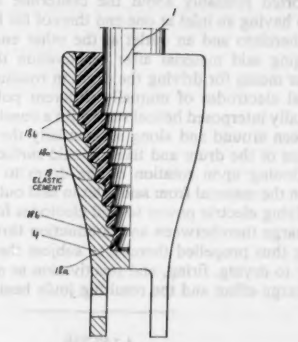
said rod being elongated and extending in a direction; said sheath surrounding said rod; said sheath having an internal bore; said sheath being comprised of a plurality of sections arranged in series longitudinally along said sheath;

first buffer means support means inside each said section of said sheath;

respective second buffer means support means on said rod and spaced from the respective said first buffer means support means;

elastic and compliant buffer means between each said first buffer means support means and the respective said second buffer means support means; moving in said direction along said rod, each said buffer means having the characteristic that its compliance is greater than the compliance of the neighboring said buffer means back along said rod, with the compliances of said buffer means being selected to correspond locally to the elongation of said rod with





respect to said sheath during changes in operating conditions to which said arrangement is subjected.

4,127,742

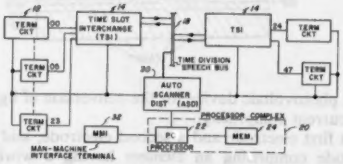
TIME DIVISION TELECOMMUNICATION SYSTEM

Gordon W. Couturier, St. Charles; Nicola L. Jovic, Chicago; Simeon Aymeloglu, Mt. Prospect; William G. Bartholomay, Chicago; Melvin Winn, Schaumberg, all of Ill., and Suhas Ghosh, San Jose, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 1, 1977, Ser. No. 829,669

Int. Cl.[2] H04Q *3/60;* H04M *3/00*

U.S. Cl. 179—18 FC **12 Claims**



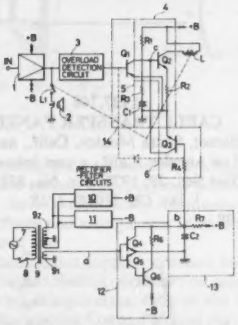
1. A telecommunications system for operating in time division multiplex, comprising a plurality of terminal circuits grouped into modular units with each such unit including a time division concentrator, a time division highway for associating terminal circuits of a group with the input side of said

concentrator, a time division multiplex bus on the output side of said concentrator, a space division switching network for completing connections between terminal circuits of different units, said network comprising plural input paths and plural output paths with each of said paths coupled to one of said concentrators, in which each of said concentrators includes a first memory for storing samples of data being transmitted to terminal circuits and received from terminal circuits, and a second memory for storing addresses of time slots of said highway to control the interchange of said data between units in said system.

4,127,743
MUTING CIRCUIT FOR LOUDSPEAKER

Akio Ozawa, and Susumu Seyoshi, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 30, 1978, Ser. No. 873,763
Claims priority, application Japan, Jan. 28, 1977, 52-8312
Int. Cl.[2] H04R 3/00
U.S. Cl. 179—1 A **6 Claims**



1. A muting circuit for loudspeakers comprising:
a relay switch for connecting a loudspeaker to an amplifier;
an around-zero-volt detection circuit for detecting around the zero volt level of a commercial AC voltage;
an RC time constant circuit controlled by the output of said around-zero-volt detection circuit; and
a relay driving circuit controlled by said RC time constant circuit for controlling said relay switch.

4,127,744
MOBILE RADIO COMMUNICATION SYSTEM

Noriaki Yoshikawa, and Masayuki Sakamoto, both of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

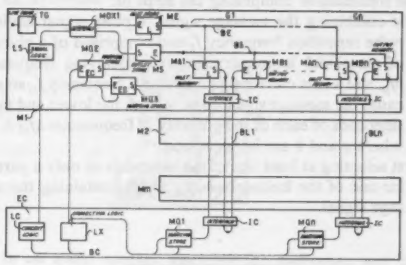
Filed Jul. 14, 1977, Ser. No. 815,750
Claims priority, application Japan, Jul. 24, 1976, 51/88395
Int. Cl.[2] H04Q 7/04
U.S. Cl. 179—2 EB **6 Claims**

1. A mobile radio communication system which simultaneously covers a service area including a first area having a large number of mobile subscribers and a second area having a small number of mobile subscribers and in which an idle mobile subscriber is automatically set in a control channel and, in case of communication, is set in an idle speech channel assigned by a base station through the control channel to communicate with the base station, characterized in that all the mobile subscribers are divided into a plurality of groups regardless of geographical location, that in the first area having a large number of mobile subscribers, a different one of a plurality of control channels is individually used for each of the plurality of groups of mobile subscribers, and that in the second area having a small number of mobile subscribers, one of said plurality of control channels is used in common for at least two of the plurality of groups of mobile subscribers.

4,127,745
DATE TIME-MULTIPLEX SWITCHING NETWORK FOR USE IN A TELECOMMUNICATIONS EXCHANGE

Rene' Deglin, Velizy-Villacoublay, and Francoise Crapet, Maurepas, both of France, assignors to Compagnie Industrielle des Telecommunication Cit-Alcatel S.A., Paris, France

Filed Mar. 23, 1977, Ser. No. 780,394
Claims priority, application France, Mar. 31, 1976, 76 09390
Int. Cl.[2] H04J 3/02
U.S. Cl. 179—15 BA **8 Claims**



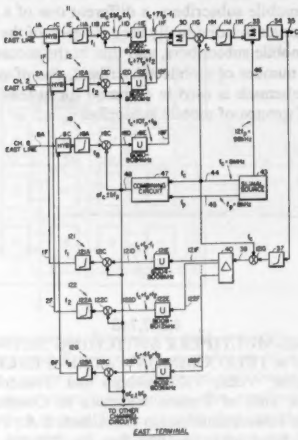
1. A time multiplex modular connection network for use in an automatic exchange serving lines carrying binary signals comprising, a memory having three memory stages, said stages addressed by address counters and marking stores, said memory stages comprising an inlet memory stage, an outlet memory stage, and a selection memory stage, said selection memory stage divided into n selection groups, each module of said network comprising a number of line equipment, an inlet store and an outlet store serving said lines, and each of the n selection groups comprising a sub-group in each module having an input memory and an output memory, the connections between memory stages of the network comprising, in each module, an inlet bus between the output of the inlet store and the input of the input memory of each sub-group pertaining to said module and an outlet bus between the input of the outlet store and the output of the output memory of the sub-group of the module, said connections between memory stages of the network further comprising each of the n selection groups having a connecting bus between the output of each of said input memories of the group and the input of each of the output memories of the same group.

4,127,746

METHOD AND APPARATUS EMPLOYING A PULSED CARRIER IN GENERATING SINGLE SIDEBAND SIGNALS FOR FDM TRANSMISSION

James A. Stewart, Menlo Park, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Jul. 21, 1977, Ser. No. 817,897
Int. Cl.[2] H04J 1/06
U.S. Cl. 179—15 FS **23 Claims**



19. In a frequency division multiplex system, the method of translating a message signal in one frequency band having an upper frequency limit f_u to an other frequency band for subsequent transmission comprising the steps of:

first combining the message signal, a pulse signal having a pulse repetition frequency f_p and comprised of a plurality of sinusoidal harmonic components having frequencies bf_p, and a first carrier signal having a frequency f_{cl} so as to cause the message signal to be in both the lower and upper sidebands of each of the plurality of frequencies $af_{cl} \pm bf_p$; where a and b are integers; and

first selecting at least one of the sidebands of only a particular one of the frequencies $af_{cl} \pm bf_p$ containing the message signal.

4,127,747

VOLTAGE BOOST CIRCUIT FOR TELEPHONE SYSTEMS

Israel Levi, Ottawa, Canada, assignor to Northern Telecom Limited, Quebec, Canada

Filed Sep. 23, 1977, Ser. No. 836,063
Int. Cl.[2] H04Q 1/30
U.S. Cl. 179—16 F **6 Claims**

1. A voltage boost circuit for use with telephone systems, said boost circuit comprising:

a first pair of terminals for connection to a central office;

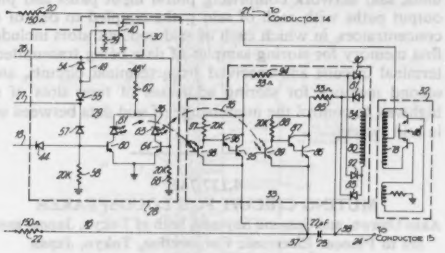
a second pair of terminals for connection to a subscriber line;

a detector means for sensing current flow in said subscriber line and for producing two logic output signals indicative of the current conditions in said subscriber line;

a capacitor for connection in a series circuit relationship with one conductor of said subscriber line;

an oscillator means for providing an alternating voltage;

charge control means for rectifying said alternating voltage, for applying the rectified voltage across said capacitor, in the appropriate polarity sense as determined by said logic output signals, and



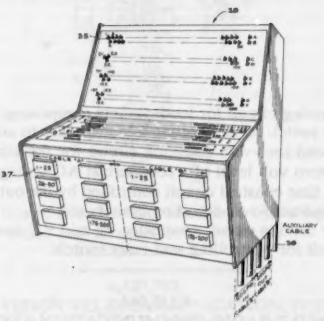
for discharging said capacitor in response to an open circuit in said subscriber line.

4,127,748

CABLE TRANSFER PANEL

George W. Gillemot, Santa Monica, Calif., assignor to John T. Thompson, Los Angeles, Calif., a part interest

Filed Sep. 29, 1977, Ser. No. 837,826
Int. Cl.[2] H04Q 1/18
U.S. Cl. 179—98 **13 Claims**



1. In a cable transfer panel for a telephone central office main frame, the combination of:

a plurality of switches mounted in said panel, each of said switches having a first pair of fixed poles, a second pair of fixed poles and a pair of moving arms for interconnecting corresponding poles of said first and second pairs when the switch is moved from the open to the closed position;

a first cable in said panel and having a plurality of line pairs, with each line pair connected to the first pair of poles of a corresponding switch;

a second cable in said panel and having a plurality of line pairs with each line pair connected to the second pair of poles of a corresponding switch, whereby corresponding line pairs of said first and second cables are interconnected by closing the corresponding one of said switches;

first means for connecting said first cable to a plurality of line pairs at the main frame; and

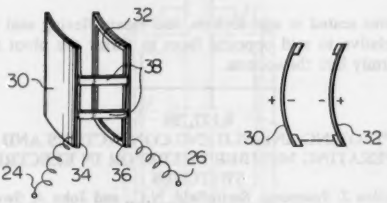
second means for connecting said second cable to a plurality of line pairs at the main frame, whereby one line pair at the main frame may be connected to another line pair at the main frame by actuation of only one of said switches.

4,127,749

MICROPHONE CAPABLE OF CANCELLING MECHANICAL GENERATED NOISE

Nobuhisa Atoji; Hiroyuki Naono; Hiroshi Yamamoto, and Satoru Ibaraki, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 31, 1977, Ser. No. 783,385
Claims priority, application Japan, Sep. 9, 1976, 51-108608
Int. Cl.[2] H04R 17/02
U.S. Cl. 179—110 A 6 Claims



1. A noise-cancelling electroacoustic transducer comprising:

a pair of first and second high-polymer piezoelectric membranes each having electrically conductive, oppositely polarized surfaces and a single axis of elongation parallel to said surfaces; and

an electrically conductive support structure having an opening therethrough including opposed first side portions and opposed second side portions, each of the first side portions including opposed first and second curved perimetrical edges in the direction of the axis of said opening and each of said second side portions including straight perimentrical first and second parallel edges, said first and second membranes being held respectively in a part-cylindrical shape in spaced relation by the curvature of said first and second perimentrical edges of said first side portions and the straight perimetrical edges of said second side portions which the circumference of the part-cylindrical shape being parallel to said axis of elongation, the direction of curvature of said first and second perimetrical edges of said first side portions and the direction of polarization of said membranes being such that output voltages produced from the outer faces of said membranes in response to an impulse reinforce each other when they are flexed in opposite directions and cancel out each other when they are flexed in a same direction.

4,127,750

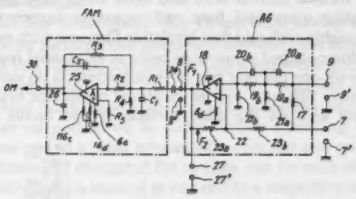
APPARATUS FOR TRANSMITTING AND RECEIVING PULSES

Lucien P. E. Prudhon, Soisy-sur-Seine, and Jean P. G. Charil, Clamart, both of France, assignors to Association des Ouvriers en Instruments de Precision, Paris, France

Continuation-in-part of Ser. No. 516,575, Oct. 21, 1974, Pat. No. 4,001,524, which is a continuation of Ser. No. 319,168, Dec. 29, 1972, abandoned. This application Oct. 12, 1976, Ser. No. 731,762
Claims priority, application France, Jan. 4, 1972, 72.00102; Dec. 8, 1972, 72.43763; Nov. 14, 1975, 75 34824
Int. Cl.[2] H04B 1/58
U.S. Cl. 179—170 R 28 Claims

1. In a pulse-code-modulation telecommunication system comprising a subscriber line, a modulation channel for forming samples of low-frequency signals originating at said subscriber line and for converting said samples into outgoing code pulses, a demodulation channel for converting incoming code pulses into low-frequency signals to be transmitted to said subscriber line, and duplexing means for coupling said channels to said subscriber line while decoupling said channels from each other,

the improvement wherein said demodulation channel in-



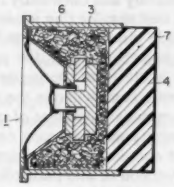
cludes detector means followed by active filter means of the Sallen-Key type having an amplitude/frequency response of low-pass type compensating for the $(\sin \omega\tau/2)/\omega\tau/2$ distortion due to the conversion of said incoming code pulses, ω being the angular frequency of the low-frequency signals transmitted to said subscriber line and τ being the duration of each of said samples.

4,127,751

LOUDSPEAKER WITH RIGID FOAMED BACK-CAVITY

Shouzo Kinoshita, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 24, 1976, Ser. No. 744,852
Claims priority, application Japan, Nov. 27, 1975, 50-160758; Jun. 4, 1976, 51-65406; Jun. 4, 1976, 51-65407
Int. Cl.[2] H04R 1/28
U.S. Cl. 179—180 7 Claims



1. In an audio speaker assembly for mid-range and high frequency sounds adapted to be mounted in a speaker cabinet together with a low frequency speaker, and including a generally cylindrical back cavity surrounding and projecting to the rear of the speaker within the cavity, the improvement characterized by:

the back cavity having disposed therein a rigid, homogenous, open celled, foamed material block having a high acoustic absorptivity characteristic, an annular flange-shaped mounting member holding said foamed material, and a separate non-permeable, air-tight film covering the side and back walls of said foamed block.

4,127,752

TACTILE TOUCH SWITCH PANEL

Blaine G. Lowthorp, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

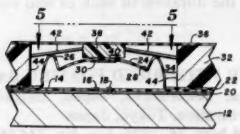
Filed Oct. 13, 1977, Ser. No. 841,931
Int. Cl.[2] H01H 13/70
U.S. Cl. 200—5 A 7 Claims

1. A tactile feedback electrical switch assembly for intermittently altering the electrical condition of normally spaced apart conductors and comprising:

(a) base pad means for receiving and retaining said electrical switching assembly thereon;

(b) a first insulative film having means insulatively mounting a plurality of spaced apart electrical switching conductors upon said base pad means with mutally adjacent conductors of said electrical switching conductor forming a pair of switch contacts;

(c) a tactile layer having a plurality of dome-shaped projections formed therein with said layer being arranged for mounting upon said base pad means in superimposed relationship with said first insulative film, and with each of said dome-shaped projections being in substantial registration with one discrete pair of switch contacts on said first insulative film and with an electrical conductor bridging contact area on the inner surface of said tactile layer



within said dome and in substantial registration with said contacts; and

(d) said dome-shaped projection comprising a generally parabolic disc with a raised center portion and an annular ring projecting upwardly and outwardly from the edge of said parabolic disc, said annular ring joining said parabolic disc along a generally circular transition line, said transition line normally being located at the apex of an angle which is generally acute from the upper surface of said dome-shaped projection and wherein the upper surface of said parabolic disc extends above that of said annular ring, the arrangement being such that upon depression of said parabolic disc, said annular ring functions as a hinge for accommodating inversion of said parabolic disc and resultant contact between said bridging contact and said switch contacts.

4,127,753

HINGE TERMINAL MOUNTING FOR ELECTRIC CIRCUIT DISCONNECT SWITCH

Ronald P. Bridges, 9 S. 681 Brookeridge Rd., Downers Grove, Ill. 60515

Filed Oct. 27, 1977, Ser. No. 845,879
Int. Cl.² H01H *31/00, 1/42*
U.S. Cl. 200—48 KB **12 Claims**

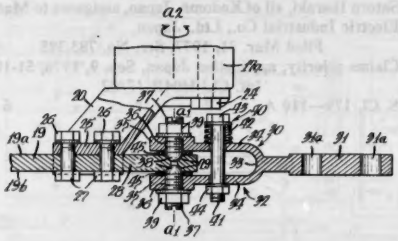
1. In an electric circuit disconnect switch which includes a fixed jaw adapted to be connected to an electric power transmission line and a blade having a hinge terminal end portion about which it is adapted to pivot and having a free end adapted to be selectively engaged with said fixed jaw, an improved hinge terminal mounting comprising, in combination:

a support rotatable about an axis;

a blade having a hinge terminal end portion with opposite faces provided with circular sockets on a common axis;

means mounting said blade on said support with said common axis substantially on a projection of the axis of rotation of said support;

and a terminal connector adapted to be connected to a power transmission line, said terminal connector having a bifurcated end portion defining a bight and substantially parallel arms which are in spaced, flanking relationship to said opposite faces, aligned, cylindrical pivot studs on said



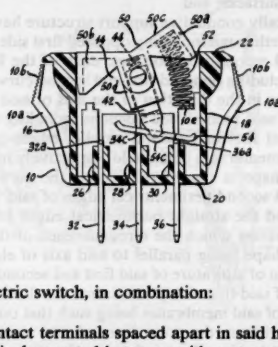
arms seated in said sockets, and means flexing said arms relative to said opposite faces to thrust the pivot studs firmly into the sockets.

4,127,754

PIVOTING AND SLIDING CONTACTORS AND OPERATING MEMBER THEREFOR IN ELECTRIC SWITCHES

Leonardus J. Josemans, Smithfield, N.C., and John A. Swessel, Jr., Milwaukee, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 7, 1976, Ser. No. 730,367
Int. Cl.² H01H *13/28*
U.S. Cl. 200—67 G **4 Claims**



1. In an electric switch, in combination:

a housing;

a pair of contact terminals spaced apart in said housing;

a third terminal mounted between said contact terminals in said housing, said third terminal having a contact portion centrally located and substantially narrower in width than the remainder of that terminal and extending above the corresponding ends of said contact terminals;

a movable contactor of a width greater than said contact portion of said third terminal cooperating with said terminals to complete electrical circuits between said contact portion of third terminal and either of said contact terminals;

an operator pivotally mounted in said housing, and having a portion exteriorally thereof which is engageable to effect pivoting thereof;

a contactor operating member within said housing and having a central stem portion in resilient engagement with said operator and laterally spaced apart portions connected with said stem portion, said contactor having means formed therein on opposite sides of said contact portion of said third terminal to receive and continuously seat complementally formed ends of said spaced apart portions of said contactor operating member while affording free pivoting of the latter therein, and said operating

member being pivotally movable by said operator to pivot said contactor on the contact portion of said third terminal and to slide it thereon into engagement with either of said contact terminals.

4,127,755

VACUUM SWITCH TUBE

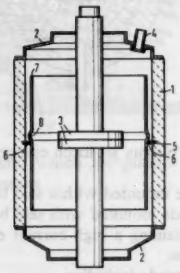
Günter Bialkowski, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 2, 1976, Ser. No. 710,877

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1975, 2534954

Int. Cl.[2] H01H *33/66*

U.S. Cl. 200—144 B **2 Claims**



1. In a vacuum switch tube with a hollow cylinder insulator member which is vacuum sealed at the ends by metallic flanges carrying switch contacts and which is provided with a circumferential inner groove at a central portion within which a ring-shaped metallic mounting is arranged, said mounting carrying a hollow cylindrical metallic protective screen which is spaced from the inner insulator member walls, the protective screen surrounding the switch contacts concentrically, wherein the improvement comprises a curved protrusion integrally formed from and at a central portion of the protective screen in the form of a circumferential ridge via which the protective screen is attached to the ring-shaped mounting; and said ring-shaped metallic mounting comprising two segment-shaped punched parts.

4,127,756

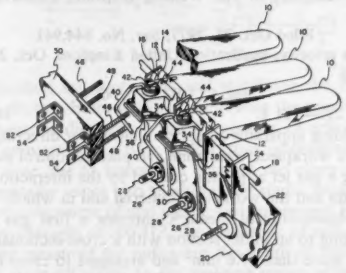
ORGAN STOP TABLET MECHANISM

Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464, and Antal Szegedi, R.R. #2, Box 65, Lockport, Ill. 60441

Filed Jun. 27, 1977, Ser. No. 810,133

Int. Cl.[2] G10B *3/10*

U.S. Cl. 200—153 K **5 Claims**



1. A stop tablet mechanism for electronic organs or the like, comprising,

a supporting bracket having a plurality of parallel spaced-apart elongated flanges, each having an opening therethrough substantially aligned with the openings in the others, and having a plurality of attaching means positioned one each between adjacent ones of said flanges and spaced from the alignment axis of the openings in said flanges,

an elongated rod received and supported in the openings in said flanges,

a plurality of elongated stop tablets each having upper and under surfaces, one positioned between each adjacent pair of said flanges, and each having a transverse groove in its upper surface near one end thereof engaging said elongated rod for pivotal movement thereabout, and having a curved portion on its under surface extending from said one end to a point substantially opposite said groove, and

a plurality of elongated flat springs, one for each of said stop tablets, each secured at one end to a respective one of said attaching means with said one end lying substantially in a plane including said elongated rod, its other end being free and engaging the said curved portion of the under surface of said stop tablet, that portion of the spring engaging the stop tablet having a radius of curvature substantially conforming to said curved portion of the tablet thereby to urge the bottom of said groove into engagement with said elongated rod and to maintain said stop tablet in a predetermined neutral position, and operative to return the stop tablet to said neutral position from alternate positions of use displaced from said neutral position.

4,127,757

CONTACT DEVICE FOR AN ELECTRIC SWITCH

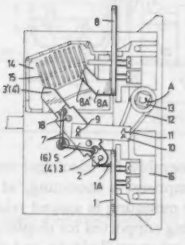
Jouko Kylmänen, Vaasa, Finland, assignor to OY. Stromberg AB., Vaasa, Finland

Filed Apr. 21, 1977, Ser. No. 789,595

Claims priority, application Finland, Apr. 27, 1976, 761163

Int. Cl.[2] H01H *1/42*

U.S. Cl. 200—254 **3 Claims**



1. A contact device for an electric switch having an open and a closed position, comprising:

at least two interconnectable contacts;

at least two contact knives movable relative to said contacts and arranged, in said closed position of the switch, to clamp between themselves at least one of said contacts; and

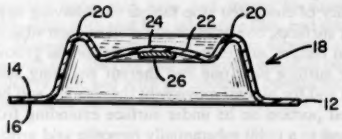
magnetic metal elements enclosing said contact knives in pairs such that when a short-circuit current passes through said contact knives, said metal elements act as magnets increasing the contact force.

4,127,758

TACTILE LAYER HAVING HINGED DOME

Blaine G. Lowthorp, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

Filed Oct. 13, 1977, Ser. No. 841,918
Int. Cl.[2] H01H 3/12, 13/14
U.S. Cl. 200—340 5 Claims



1. An article of manufacture comprising:

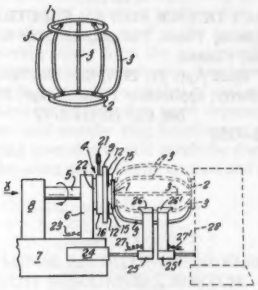
(a) a sheet of flexible material of substantially constant thickness having first and second surfaces and having at least one integrally formed deformation extending inwardly from said first surface and outwardly from said second surface thereof, said deformation being in the form of an annular ring portion completely surrounding a circular convex dome shaped projection and extending upwardly and outwardly therefrom.

4,127,759

ELECTRICAL RESISTANCE WELDING APPARATUS

David S. Pile, and Alan J. Vernau, both of High Wycombe, England, assignors to James Terence Higgins, Montreal, Canada

Filed Dec. 10, 1976, Ser. No. 749,302
Claims priority, application United Kingdom, Dec. 11, 1975, 50822/75
Int. Cl.[2] B23K 11/00
U.S. Cl. 219—56 21 Claims



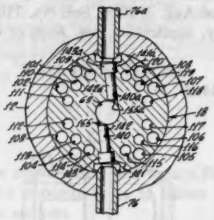
1. An electrode assembly for electrical resistance welding apparatus which comprises: a mounting; at least two anvil blocks carried on the mounting in spaced relationship, at least one of said blocks being supported for displacement relative to the mounting and the other anvil blocks, and at least one of said blocks being electrically conductive to serve as an electrode whereby an electric welding current can be passed through said conductive anvil block; control means for moving at least one of the displaceable anvil blocks relative to the mounting and the other anvil blocks so that the blocks can together engage and clamp a workpiece to the mounting in preparation for welding; and a secondary welding electrode positioned in the vicinity of the electrically conductive anvil block for clamping a second workpiece against the first workpiece whereby the two workpieces may be spot welded together by means of electric currents passing between the electrically conductive anvil block and the secondary electrode.

4,127,760

ELECTRICAL PLASMA JET TORCH AND ELECTRODE THEREFOR

Philip J. Meyer, and Robert P. Delavega, both of Costa Mesa, Calif., assignors to Geotel, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 584,983, Jun. 9, 1975, abandoned. This application Mar. 15, 1976, Ser. No. 667,112
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 P 16 Claims



1. An electrical plasma jet torch comprising

a torch body,

a back electrode mounted within said body,

a nozzle electrode mounted with said body,

means for maintaining a high-current electric arc between said electrodes,

said nozzle electrode including

a nozzle passage extending through said nozzle electrode from the back to the front end of said nozzle electrode,

a plurality of radially spaced rows of longitudinal coolant passages formed in said nozzle electrode and extending through said front end thereof,

a cover plate secured to the front of said torch body at the front end of said nozzle electrode,

cooperating means on said cover plate and said front end of said nozzle electrode for providing a coolant flow reversing chamber interconnecting the front ends of said coolant passages, passages of said rows being positioned in groups of pasages, said groups being mutually spaced circumferentially by distances greater than the circumferential spacing between adjacent passages of a row within a group, and

including powder conduit means extending substantially radially through said nozzle electrode to said nozzle passage between groups of at least one pair of said groups for receiving powder and directing it into said nozzle passage.

4,127,761

LASER WELDING

John T. Pauley, and John D. Russell, both of Cambridge, England, assignors to The Welding Institute, Cambridge, England

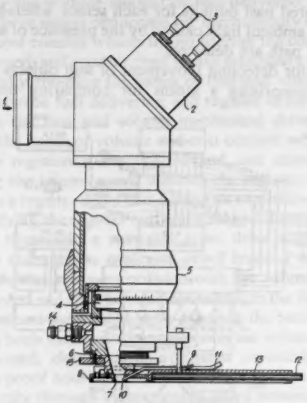
Filed Oct. 25, 1977, Ser. No. 844,941
Claims priority, application United Kingdom, Oct. 25, 1976, 44269/76
Int. Cl.[2] B23K 9/00
U.S. Cl. 219—121 L 14 Claims

1. Welding apparatus comprising means for directing a laser beam at a workpiece weld zone and plasma control means for directing a gas jet at plasma created by the interaction of the laser beam and the workpiece material and in which:

said plasma-control means comprises a first gas conduit leading to an outlet section with a cross-sectional area of not more than 19.6 mm^2 and arranged to cross the laser beam at an angle of 20° to 50° to the axis of the laser beam;

the apparatus further comprising a second gas conduit, for shielding gas, leading to the region of the crossover of the laser beam and the plasma-control means to form a gas

shield around the said crossover region, the shielding gas reducing the possibility of contamination or porosity of



the weld zone into which the plasma is blown by the plasma-control means .

4,127,762

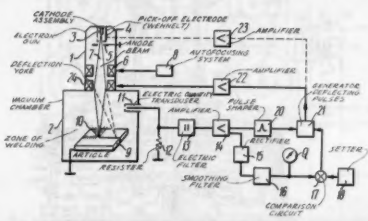
METHOD FOR CONTROLLING AND STABILIZING FUSION DEPTH IN ELECTRON-BEAM WELDING AND DEVICE FOR EFFECTING SAME

Boris E. Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Nikolai V. Podola, ulitsa Pushkinskaya, 8, kv. 12, and Alexei P. Obolonsky, ulitsa Bereznyakovskaya, 24, kv. 127, all of Kiev, U.S.S.R.

Continuation of Ser. No. 508,911, Sep. 24, 1974, abandoned. This application Aug. 24, 1976, Ser. No. 717,888

Int. Cl.[2] B23K *9/00*

U.S. Cl. 219—121 EM **3 Claims**



1. A method for controlling and stabilizing the depth of fusion in electron-beam welding, comprising the steps of holding constant the diameter of the hot spot on an article being welded, converting the flow of electrons originating in the welding zone due to interaction between the electron beam and the metallic vapor into an alternating signal, separating a frequency component of said signal, said component having a frequency upwards of 200 HZ, the amplitude of said component being measured for indicating the depth of fusion, and applying a cut-off signal to the welding means at moments when vapor is ejected, the welding beam current being controlled in response to electron quantity in the beam reflected from a vapor cloud over the welding bath.

4,127,763

HEATED WINDOW WITH A MOISTURE SENSOR HAVING A HIGH IMPEDANCE

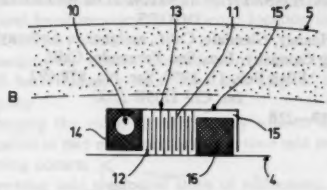
Sergio Roselli, Pisa, Italy, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 568,997, Apr. 17, 1975, Pat. No. 4,032,745. This application Jun. 2, 1976, Ser. No. 692,141

Claims priority, application France, Jun. 2, 1975, 75 17091

Int. Cl.[2] H05B *1/02;* E06B *7/12*

U.S. Cl. 219—203 **10 Claims**



1. A heated window having a heating grid formed of a plurality of resistive heating conductors and a moisture sensor formed on the window for connection to a moisture detector for automatically controlling the energization of the heating grid, said sensor having a first electrode connected to an output terminal and a second electrode connected to a heating conductor of the heating grid, the area of the sensor including said output terminal being disposed within the heating zone of the heating grid and said output terminal being positioned closer to the center of the heating zone than the edge of the area of said sensor furthest from the center of the heating zone.

4,127,764

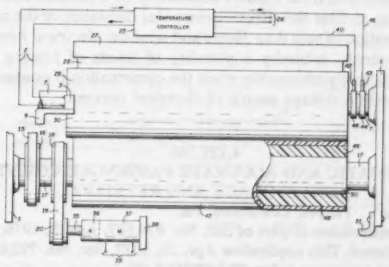
HIGH EFFICIENCY FUSER ROLL ASSEMBLY FOR XEROGRAPHIC MATERIAL

Henry T. Minden, Concord, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,438

Int. Cl.[2] H05B *1/00;* G03G *15/20*

U.S. Cl. 219—216 **9 Claims**



1. An efficient fuser roll assemnbly for use in a xerographic copier including:

frame means,

shaft means,

bearing means for journalling said shaft means at opposite ends thereof within said frame means,

said shaft means having a hollow central thermally conductive portion and having an inner and an outer wall,

said shaft means additionally having end portions of thermal conductivity much lower than the thermal conductivity of said hollow central portion,

heater means in intimate contiguous heat exchanging contact with said inner wall within said hollow central portion,

an array of spaced, radially extending, thermally conductiv-

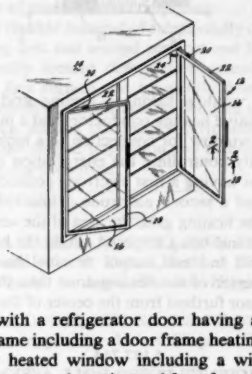
ity fins affixed to said outer wall, each said fin having an outer peripheral portion, and

hollow cylindrical tube means surrounding said array of fins in intimate conductive heat exchanging relation at said outer peripheral portions of said fins, whereby heat is efficiently propagated by direct conduction from said heater means to said hollow cylindrical tube means and flow of heat through said bearing means in inhibited.

4,127,765
ANTI-CONDENSATION SYSTEM FOR REFRIGERATOR DOORS

James J. Heaney, Glendale, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Feb. 17, 1978, Ser. No. 878,692
Int. Cl.[2] H05B 1/00
U.S. Cl. 219—218 **9 Claims**



1. For use with a refrigerator door having an electrically heated door frame including a door frame heating element and an electrically heated window including a window heating element to prevent condensation and frost from forming, apparatus for providing variable levels of heating, comprising:

switching means electrically connectable to the door frame electrical heating element and to the window electrical heating element for selectively altering the manner in which said door frame electrical heating element and said window electrical heating element are electrically interconnected from a series connection to a parallel connection, to alter the effective electrical resistance of the combination of said door frame and window electrical heating elements, whereby a plurality of levels of heating are selectively obtainable when the combination is connected across a voltage source of electrical current.

4,127,766
AUTOMATIC AND ACCURATE PASSENGER COUNTER WITH STORAGE AND RETRIEVAL

Stephen C. Thayer, Lewistown, Pa.

Continuation-in-part of Ser. No. 674,037, Apr. 5, 1976, abandoned. This application Apr. 28, 1977, Ser. No. 792,051
Int. Cl.[2] G07C 9/00
U.S. Cl. 235—92 PK **9 Claims**

1. An apparatus for detecting the number of objects traversing a given path having a first and a second boundary comprising:

a plurality of discrete light sensors adjacent to one another and positioned adjacent and along said path for sensing the ambient light in said path, at least a first of these sensors for sensing ambient light at said first boundary and a second for sensing ambient light at said second boundary,

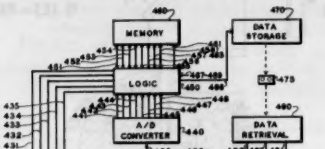
a scanner for periodically sampling the output of each of said sensors,

a first memory, the output of said scanner being connected to said memory to store therein the present outputs of each sensor as it is scanned,

a second memory connected to said first memory for storing the past outputs of each sensor,

a comparator for comparing the stored present outputs with the stored past outputs for each sensor whereby changes in said ambient light caused by the presence of said objects in said path are detected,

a means for detecting movement of said objects along said path comprising a means for comparing the detected



changes in ambient light at one sensor with detected changes at adjacent sensors along said path,

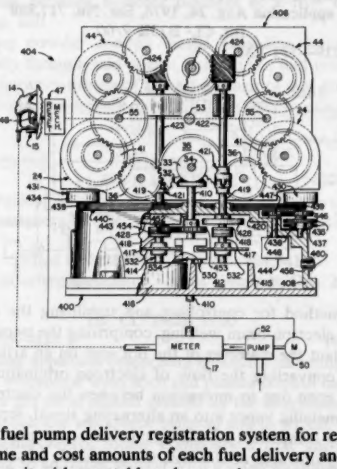
a means responsive to said first and said second sensors and responsive to said detecting means for determining if a detected moving object has traversed both of said boundaries, and

a means responsive to said determining means for recording each such traversal.

4,127,767
COUNTER OPERATING SYSTEM

Donald W. Fleischer, Wethersfield, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Continuation-in-part of Ser. No. 772,943, Feb. 28, 1977. This application Sep. 12, 1977, Ser. No. 832,553
Int. Cl.[2] B67D 5/22
U.S. Cl. 235—92 FL **18 Claims**



1. In a fuel pump delivery registration system for registering the volume and cost amounts of each fuel delivery and having a register unit with resettable volume and cost counter sections with pairs of oppositely facing resettable volume and cost counters respectively, with banks of coaxial resettable volume and cost counter wheels of increasing order respectively, for registering the volume and cost amounts of fuel delivered

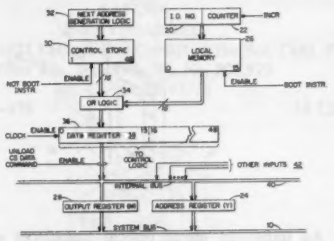
respectively; first mechanical drive means connected for mechanically indexing the banks of volume counter wheels for registering the volume amount of fuel delivered; second mechanical drive means connected for mechanically indexing the banks of cost counter wheels for registering the cost amount of fuel delivered; and counter reset means selectively operable for mechanically resetting the banks of cost and volume counter wheels between fuel deliveries; and register drive means connected to the first and second mechanical drive means for indexing the banks of volume and cost counter wheels respectively for registering the volume and cost amounts of fuel delivered; the improvement wherein the register drive means comprises a register drive unit having an explosion-proof housing underlying the register unit and attached thereto to form an assembly therewith, a rotatable input drive shaft extending upwardly through the explosion-proof housing and having a lower end rotatable in accordance with the volume amount of fuel delivered and an upper end connected to the first mechanical drive means for mechanically indexing the banks of volume counter wheels therewith for registering the volume amount of fuel delivered, electrical motor means mounted within the explosion-proof housing having cost drive shaft means extending upwardly through the explosion-proof housing connected to the second mechanical drive means for mechanically indexing the banks of cost counter wheels therewith for registering the cost amount of fuel delivered, price switch means presettable for establishing the unit volume price of fuel, and motor operating means mounted within the explosion-proof housing for being operated by the input drive shaft, for operating the electrical motor means for indexing the banks of cost counter wheels for registering the cost amount of fuel delivered in accordance with the volume amount of fluid delivered and the unit volume price established by the setting of the price switch means.

4,127,768

DATA PROCESSING SYSTEM SELF-TEST ENABLING TECHNIQUE

Virendra S. Negi, Pepperell, and Ming T. Miu, Chelmsford, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1977, Ser. No. 756,298
Int. Cl.[2] G06F *11/04*
U.S. Cl. 235—304.1 **8 Claims**



1. In a data processing system, a machine implemented process for enabling the self-test of a central processor included in the system when coupled with a main memory in the system, said central processor including a local memory for storing a plurality of test programs, said process comprising the method steps of:

A. providing a first base address to one of said test programs stored in said local memory of said processor, said first base address being one of a plurality of base addresses, each of said base addresses used to address a different one of said test programs;

B. providing a word address to the first word in said test program for which a said base address is provided by said step of providing;

C. addressing a word location in a control store in said processor, said control store coupled to control the operation of said processor;

D. determining that the contents of said word location addressed in said control store indicates that said local memory is to be addressed;

E. addressing said local memory with said first base address and said word address;

F. providing, independent of said step of addressing said local memory, a memory address to a word location in said main memory;

G. transferring the contents of the word location addressed in said local memory to the word location indicated by said memory address;

H. changing the value of the address of said word location in said local memory each time said step of transferring occurs;

I. changing the value of the memory address of the word location in said main memory each time said step of transferring occurs;

J. repeating said sequential steps of addressing, providing, transferring, changing and changing until said one of said test programs is stored in said main memory; and

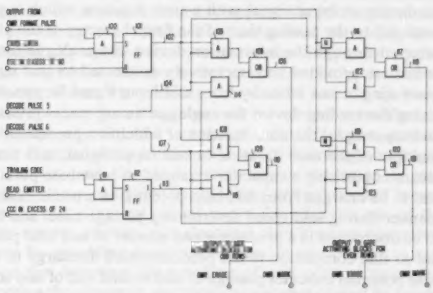
K. executing said one of said test programs to determine the performance level of said processor.

4,127,769

MARKING MESSAGE CARD AND TEMPLATE ASSEMBLY AND RELATED INPUT SWITCHING CIRCUITRY AND METHOD OF MAKING THE ASSEMBLY

Edward J. Corwin, 200 Central Park South, Apt. 11A, New York, N.Y. 10019

Continuation-in-part of Ser. No. 257,298, May 26, 1972, Pat. No. 4,001,549, which is a continuation-in-part of Ser. No. 151,676, Jun. 10, 1971, abandoned. This application Dec. 13, 1976, Ser. No. 750,322
Int. Cl.[2] G06K *7/10, 21/06;* G08C *9/06*
U.S. Cl. 235—456 **4 Claims**

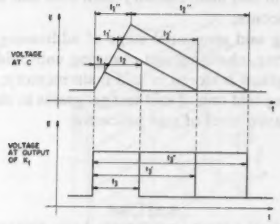


3. In an optical mark reader apparatus including mark sensing means for horizontally scanning a card and normally sensing the presence or absence of a mark in all marking areas in a series of marking columns on the card, the improvement comprising circuit means connected to said apparatus for inhibiting the sensing of selected marking areas in selected columns on the card, wherein the card has a series of first vertical data columns having first and second marking columns with the first marking column containing only odd-numbered marking areas and the second column containing only even-numbered marking areas, and wherein said circuit means comprises means for inhibiting the sensing of even-numbered marking areas in the first marking columns and for inhibiting the sensing of odd-numbered marking areas in the second marking columns.

4,127,770
ARRANGEMENT FOR SYNCHRONIZING AN INFORMATION READING DEVICE WITH THE SPEED OF AN INFORMATION MEDIUM

Helmut Baader, Nabburg, Fed. Rep. of Germany, assignor to Interroll Fordertechnik GmbH & Co. K.G., Dhunn, Fed. Rep. of Germany

Filed Sep. 23, 1976, Ser. No. 726,009
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2544119
Int. Cl.[2] G06K *7/016, 9/00*
U.S. Cl. 235—474 5 Claims



1. An arrangement for synchronizing an information reading device with the relative speed of the movement between the reading device and an information medium, the information of which is formed by single characters of a character set having a fixed number of single characters in fixed spatial relationship characterized in that signal generating means are provided for producing an input signal with a time duration which is proportional to the passing time of the first character of the character set through the information device, and analogue timing means are provided and operatively connected to said signal generating means whereby from said input signal for synchronizing the reading device the anglogue timing means produces an output signal the time duration of which is a predetermined multiple of the time duration of said input signal, said timing means comprising a capacitor arranged to have base potential and to be charged from said base potential in a predetermined manner during said speed determining passage time, and then to be discharged in a predetermined manner to said base potential so that completion of the predetermined discharge to said base potential indicates passage of said second end of said set of characters past said information reading device, and wherein said capacitor is provided with:

a first current source for supplying a capacitor charging current;

a second current source for supplying a first capacitor discharging current, which first capacitor discharging current is of equal strength with said capacitor charging current;

a third current source for supplying a second capacitor discharging current;

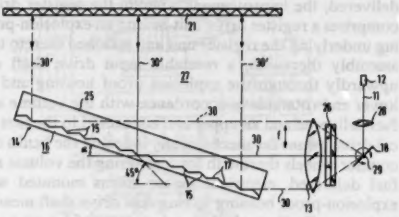
amplifier means arranged to switch off said second current source when a very small voltage change occurs at the capacitor; and

switch means arranged to switch on and switch off said third current source at the beginning and end, respectively, of said speed determining passage time.

4,127,771
OPTICAL APPARATUS

Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Jun. 30, 1976, Ser. No. 701,073
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1975, 2532602
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—221 21 Claims

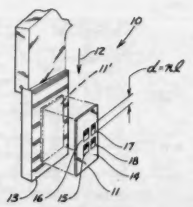


1. Optical apparatus for extending a light curtain, having a light source which emits a light beam, and a deflection device which periodically shifts the light beam parallel to itself, wherein the light beam, which is shifted parallel to itself, is directed onto an array of plane mirrors arranged at an angle to the beam, the plane mirrors being grated in echlon formation, disposed at the same angle with the direction of incident radiation and lying in the form of a strip spaced from and in front of one another, the span of said array perpendicular to the direction of the emergent beam being greater than its span perpendicular to the direction of the incident beam.

4,127,772
MOIRE OPTICAL TRANSDUCER

Roger W. Pryor, Trumbull, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sep. 6, 1977, Ser. No. 830,450
Int. Cl.[2] H01J *39/12*
U.S. Cl. 250—237 G 8 Claims



1. An improved moire optical transducer used in linear measurements, comprising:

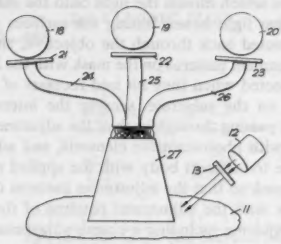
a grating set having a pair of glass plates with opaque lines disposed on each plate, a first plate of said grating set being movable with respect to a second plate of said grating set in order to form an optical moire pattern, said first movable plate having an inherent periodic error in its placement of the lines upon said glass such that the lines are not evenly spaced from each other, said periodic error having a given length of periodicity, said second plate having a grating length defining a window area length, the length of said window being a multiple of said periodic line spacing error length of said first plate grating, whereby the grating set possesses a minimum optical operating error resulting from said periodic line spacing error.

4,127,773

CHARACTERIZING AND IDENTIFYING MATERIALS

Michael A. West, Orpington, England, assignor to Applied Photophysics Limited, London, England

Filed Mar. 31, 1977, Ser. No. 783,114
Int. Cl.[2] G01N *21/38;* G01J *3/34*
U.S. Cl. 250—461 R 14 Claims



1. Apparatus for characterising an article which is provided with luminescent material, which apparatus comprises a source of excitation radiation for directing radiation at the luminescent material when the article is at a test station, a plurality of optical systems arranged to receive simultaneously radiation emitted by the luminescent material and direct the radiation to respective photodetectors, a plurality of optical filters each arranged with a different wavelength transmission and each being located in a respective one of the optical systems and arranged to pass radiation to the associated photodetector, and electrical circuit means arranged so as:

(1) to receive electrical output signals derived from said photodetectors said signals varying linearly in level in accordance with the intensity of radiation incident thereon;

(2) to effect comparison of signals derived from the respective photodetectors in order to characterise the article;

(3) to provide at least one pair of signal levels defining a desired range for use in determining whether the comparison falls within a desired range, and

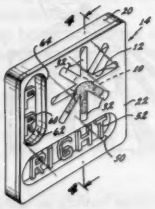
(4) to provide an output signal indicating the result of the comparison.

4,127,774

X-RAY MARKER

Jerry Gillen, 1621 LeGaye Dr., Cardiff by the Sea, Calif. 92007

Filed Jun. 20, 1977, Ser. No. 807,929
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—476 16 Claims



1. An X-ray marker, comprising:

(a) a body having at least an area therethrough formed of material transparent to X-ray radiation,

(b) said body having a cavity in said area and a liquid opaque to X-ray radiation in said cavity, and

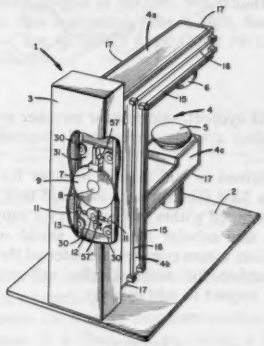
(c) said cavity having a broader portion and at least one branch transversely narrower than said broader portion branching from said broader portion, said broader portion having greater depth relative to the face of said body than said branch and said liquid being of lesser quantity than would fill both said broader portion and said branch whereby, during use of said marker, an X-ray negative taken with said marker overlying an X-ray film will show said liquid primarily in said broader portion if said film is flat during irradiation and will show said liquid filling said narrower branch if said film is upright during irradiation and said branch depends from said broader portion.

4,127,775

X-RAY UNIT STAND HAVING FIELD CONTROLLED BRAKE RELEASE

Carl-Eric Ohlson, Solna, Sweden, assignor to AO:s Metall & Mek. Verkstad AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 634,056, Nov. 21, 1975, abandoned. This application Feb. 2, 1977, Ser. No. 765,052
Claims priority, application Sweden, Nov. 25, 1974, 74/14800
Int. Cl.[2] G01N *21/00*
U.S. Cl. 250—490 5 Claims



1. A counter-balanced radiography unit stand, comprising a column, a swing arm mounted on said column, radiography means for monitoring patients mounted on said swing arm, means for moving said swing arm vertically and rotatably along the column, automatically applied vertical brake means for preventing the vertical displacement of the swing arm, automatically applied rotary brake means for preventing the rotary movement of the swing arm, electrically controlled actuating means for releasing the vertical and rotary brake means so that the swing arm can be moved rotatably and vertically wherein said actuating means includes contact means disposed along a substantial part of the swing arm length for contact, and electrical circuit means connected to said contact means, whereby the touching of said contact means actuates said electrical circuit means for releasing one of the brake means, wherein said electrical circuit means comprises means for providing an electrical signal to said contact means, means for detecting the touching of said contact means by detecting the change in electrical capacitance caused by touching the contact means, and releasing means for releasing one of the brake means when the contact means is touched.

4,127,776

X-RAY GENERATOR SELF CENTERING TUBE SHIELD

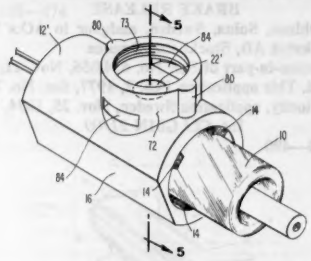
Richard A. Pickel, Toms River, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 29, 1977, Ser. No. 828,695
Int. Cl.[2] H01J *35/16*
U.S. Cl. 250—520 9 Claims

1. In an X-ray tubehead having means for generating X-rays for use in making radiographs of a patient's dental arch and surrounding areas, said tubehead including a tank and an interiorly threaded eyeport at an upper portion of said tank, an X-ray source within said tank, said source having a focal point

area from which X-rays emanate, a filament transformer mounted within said tank, a shield provided with open ends adjustably supported on said transformer and containing said X-ray source, said shield having a hole disposed therein intermediate its open ends and aligned with said X-ray source focal point area to permit X-rays emanating from said focal point area to pass through said hole,

the improvement therewith comprising an internally threaded tubular member disposed concentrically about said shield hole and extending outwardly from said shield



and into said eyeport, said tubular member and said eyeport providing a close dimensional clearance therebetween,

port means formed in said tubular member for permitting passage of a fluid therethrough into said tank, and

filter means disposed within said eyeport for supporting and suspending said tubular membered shield in said tank when said filter means engages said internal threads of said tubular member for automatically self-centering said shield with respect to said eyeport.

4,127,777

METHOD FOR AUTOMATIC ADJUSTMENT

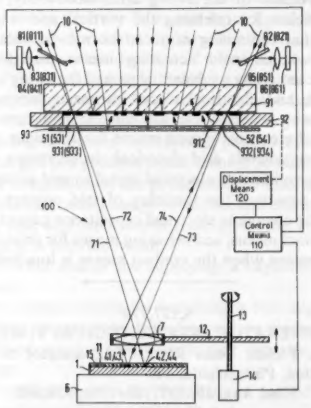
Johann Binder, Unterpfaffenhofen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jul. 13, 1977, Ser. No. 815,215

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633297

Int. Cl.² G01N *21/30*

U.S. Cl. 250—548 **9 Claims**



1. In a method for the automatic adjustment of a layered substrate including semiconductor wafers with a mask comprising the steps of providing a substrate having at least two adjustment patterns for a coarse adjustment and at least two patterns for a fine adjustment on a surface thereof with each of the adjustment patterns having a plurality of recesses; providing a transparent body having a mask disposed on one surface thereof, said mask having an adjustment pattern for each of the adjustment patterns on the surface of the substrate; providing a shutter having apertures at positions corresponding to the adjustment patterns of the mask to ensure that only light beams which pass through the adjustment patterns of the mask reach the surface of the substrate; directing convergent light from a condenser through the transparent body, the mask, the shutter, to an objective which directs the light onto the surface of the substrate so that light beams hitting the surfaces of the substrate are reflected back through the objective, shutter apertures and adjustment patterns on the mask with the light beams not being reflected when they hit said recesses of the adjustment pattern on the substrate, sensing the intensity of the reflected light passing through each of the adjustment patterns on the mask with photosensitive elements, and adjusting the position of the transparent body with the applied mask in the plane of the mask so that the adjustment patterns of the mask are in registry with the adjustment patterns of the substrate, said step of adjusting including a coarse adjustment followed by a fine adjustment with both coarse and fine adjustments including rotating the mask and moving the mask in x and y directions in response to the intensity of the reflected light sensed by photosensitive elements associated with each adjustment pattern and until the photosensitive elements receive a minimal amount of reflected light as possible, the improvements comprising after the step of adjusting, correcting the focus of the objective by displacing the objective in a direction normal to the surface of the substrate to change the intensity of the light received by the photosensitive elements and continuing said displacement until the objective reaches a position at which the photosensitive elements receive a minimal intensity of the reflected light so that the desired surface of the substrate lies in a plane of focus of the objective.

4,127,778

OPTICAL CORRELATOR

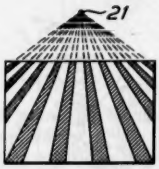
Ludwig Leitz, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jan. 14, 1977, Ser. No. 759,571

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601642; Feb. 9, 1976, 2604926

Int. Cl.² G02B *27/38*

U.S. Cl. 250—550 **12 Claims**



1. An optical correlator having an imaging optic for imaging an object space having lines vanishing in the direction of the horizon into an image plane and a spatial frequency filter arranged substantially in said image plane and at least one photoelectric detector assigned to said spatial frequency filter, wherein the improvement comprises:

said spatial frequency filter in the form of a raster having structure elements which extend in said direction of the vanishing lines of the image of the object space, said structure elements having a width which varies in accordance with the distortion of the perspective image.

4,127,779

DEVICE FOR PHOTOGRAMMETRIC EVALUATION OF STEREO-COUPLES OF PHOTOGRAPHS

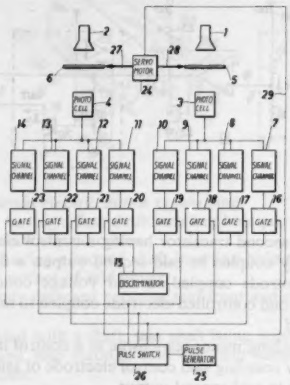
Gerhard Lauenroth, and Lutz Papenkordt, both of Jena-Lobeda, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Jun. 17, 1977, Ser. No. 797,658

Claims priority, application German Democratic Rep., Jul. 23, 1976, 194023

Int. Cl.[2] G01C *11/12*

U.S. Cl. 250—558 1 Claim



1. A device for photogrammetric evaluation of stereo-couples of serial photographs, comprising

a stereo-couple of two photographs,

displacement means for displacing at least one of said two photographs,

a first and a second cathode ray tube,

a first and a second photo-detector

said first cathode ray tube emitting a first light beam, said first photodetecting being for detecting said first light beam,

one of said photographs being arranged in said first light beam,

said second cathode ray tube being for emitting and said second photodetector being for detecting a second light beam,

the other of said photographs being arrranged in said second light beam,

a first group of four correlator signal channels,

a second group of four correlator signal channels,

said first group being electrically connected to the output of said first photodetector,

said second group being connected to the output of said second photodetector,

the individual correlator signal channels in said first and said second group having different frequency ranges and different delay times,

the individual signal channels from said first group and the individual channels from said second group are connected in pairs,

said pairs having identical frequency ranges and delay times,

eight gate circuits,

said gate circuits having first inputs,

second inputs and an output each,

said first inputs being connected to said individual signal channels,

said second inputs connecting those gate circuits being in turn connected via said first inputs to said pairs of signal channels, thus forming pairs of gate circuits,

a pulse switch having one input and four outputs,

a clock-pulse generator being connected to said one input,

said four outputs being respectively connected to said four pairs of gate circuits,

a discriminator having two inputs and one output,

the two discriminator inputs being connected via said four pairs of gate circuits and via said first group and said second group of signal channels to said first and second photodetector, respectively,

a displacement means

the discriminator output being connected to said displacement means,

said displacement means being provided with means for displacing at least one of said two photographs.

4,127,780

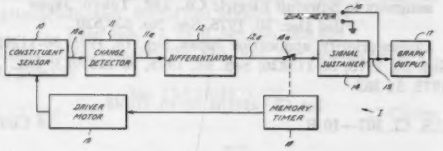
PERIODIC SAMPLING CONCENTRATION INDICATOR

Charles L. Kimbell, P.O. Box 40052, Houston, Tex. 77041

Continuation-in-part of Ser. No. 591,292, Jun. 30, 1975, abandoned. This application May 3, 1976, Ser. No. 682,374

Int. Cl.[2] G01J *1/44;* G01R *19/12*

U.S. Cl. 250—559 28 Claims



1. Apparatus for indicating the concentration of a constituent in a fluid, comprising:

sensing means for sensing the concentration of a particular constituent in a fluid and providing a linear response indicative of said concentration;

time control means for periodically activating said sensing means for a predesignated sampling phase in which said response is linear, said sensing means providing said linear response over said predesignated sampling period;

input signal means for reading said linear response over said sampling phase and for providing an input signal for said sampling phase indicative of said linear response;

signal conversion means for converting said input signal for said sampling phase into a substantially constant output signal indicative of the rate of said linear response of said sensing means over said sampling phase such that said output signal is indicative of the concentration of such particular constituent in said fluid; and

display means for reporting said output signal.

4,127,781

SCAN MIRROR POSITION DETERMINING SYSTEM

Robert N. Sato, Gardena, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 22, 1977, Ser. No. 809,149

Int. Cl.[2] G01N *21/32*

U.S. Cl. 250—562 7 Claims

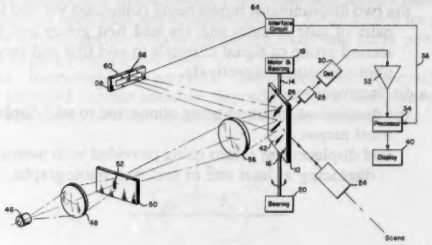
1. A position determining system comprising:

a scanning mirror having first and second sides with the first side scanning a scene to be interrogated,

a source of a substantially rectangular shaped light beam positioned to reflect from said second side of said scanning mirror,

a position sensor array having a selected number of elongated PN junctions and a mask with openings to said PN junctions to form position codes as said rectangular shaped light beam moves along said mask, said mask

having openings along the elongated PN junctions to form a gray code with each elongated PN junction representing



a bit of a predetermined significance and including a sense amplifier circuit coupled to each elongated PN junction.

4,127,782

AUTOMOTIVE POWER SUPPLY

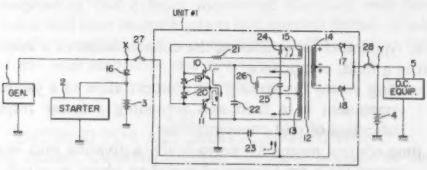
Morikazu Omura, and Yukio Okuda, both of Tokyo, Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1975, Ser. No. 639,620

Claims priority, application Japan, Sep. 18, 1975, 50-112982; Sep. 20, 1975, 50-113826; Sep. 18, 1975, 50-1129983; Dec. 30, 1975, 51-263

Int. Cl.[2] H01M *10/46, 10/48*

U.S. Cl. 307—10 R **16 Claims**



1. An automotive power supply comprising

a generator which generates voltage when an engine is operated,

a main battery which drives a starter motor, and

an auxiliary battery which acts as a power source for automotive d-c equipment, the main and auxiliary batteries being charged in parallel by the generator, wherein an isolating means and a d-c booster circuit are provided between the main and auxiliary batteries so as to charge the auxiliary battery by boosting the supply voltage to the auxiliary battery during the operation of the engine and to isolate the electric circuit between the two batteries when the engine is stopped, wherein the d-c booster circuit comprises a separately excited inverter circuit.

4,127,783

REGULATED CONSTANT CURRENT CIRCUIT

Allan A. Alaspa, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 25, 1977, Ser. No. 790,365

Int. Cl.[2] H03K *17/00*

U.S. Cl. 307—297 **9 Claims**

1. A circuit for producing a switchable output current pulse of controlled magnitude at a first output, said circuit comprising:

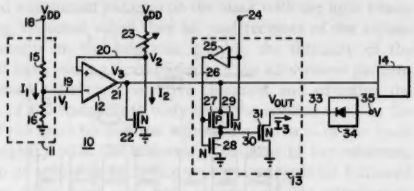
(a) a reference means for providing a reference voltage;

(b) amplifier means having first and second inputs and a second output for amplifying the voltage difference between said first and second inputs, said first input being coupled to said reference means;

(c) means coupled to said second input for producing a first current;

(d) an output circuit coupled to said second output including

(1) a first transistor having a control electrode and first and second controlled electrodes, said control electrode being coupled to said second output, said first controlled electrode being coupled to a voltage conductor, and said second controlled electrode being coupled to said second input, so that substantially all of said first current flows through said first transistor; and



(2) a second transistor having a control electrode selectably coupled to said second output, a first controlled electrode coupled to said voltage conductor, and a second controlled electrode coupled to said first output; and

(e) switching means responsive to a control input for selectively coupling said control electrode of said second transistor to said second output.

4,127,784

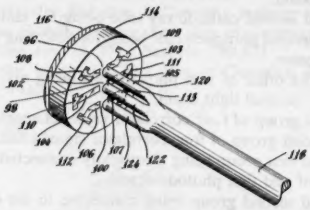
LIGHT ACTIVATED SOLID STATE MICROWAVE GENERATORS

Joseph M. Proud, Jr., Wellesley Hills; Scott L. Norman, Framingham, and Charles N. Fallier, Jr., Westford, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 6, 1977, Ser. No. 757,259

Int. Cl.[2] H03K *17/00;* **H04D** *3/04*

U.S. Cl. 307—311 **7 Claims**



1. A light activated solid state microwave switching generator comprising:

a. a plurality of semiconductor optoelectronic switches disposed on a substrate for simultaneous activation by a source of light;

b. a radio frequency transmission line coupled to each said switch and disposed proximate thereto; each said transmission line being serially connected upon activation of said switches;

c. means for coupling a DC voltage to each said transmission line;

d. electrically conductive shorting means, said shorting means being connected to one end of said serially connected transmission line upon activation of said switches; and

e. means connected to the other end of said serially connected transmission line for obtaining an output signal.

4,127,785

MINIATURE MOTOR

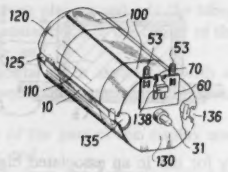
Ichiro Noguchi, Tokyo, Japan, assignor to Gakken Co., Ltd., Ohta, Japan

Filed Nov. 1, 1976, Ser. No. 737,554

Claims priority, application Japan, May 25, 1976, 51-66651[U]; Jun. 7, 1976, 51-73357[U]; Jun. 21, 1976, 51-81378[U]; Aug. 4, 1976, 51-104190[U]

Int. Cl.² H02K 5/00

U.S. Cl. 310—89 **10 Claims**



1. An educational electric motor comprising:
a front cover having a first shaft inserting hole provided on the end surface of said cover;
a rear cover having a second shaft inserting hole provided on the end surface of said cover;
a magnetic body disposed between said front and rear covers;
a rotor provided with a shaft, said shaft being supported in the front and rear through said first and second shaft inserting holes;
said rotor also including a commutator, an iron core and coils provided on said shaft;
at least a portion of said rotor being rotatably disposed in said magnetic body;
a least one current feeding member removably secured to at least one of said covers;
said end surfaces of said front and rear covers and the right and left side surfaces contiguous with said end surfaces having locking holes formed therein;
a separate pair of right and left band-shaped clamping members inserted at both ends thereof into said locking holes and bent to integrally connect said front and rear covers and magnetic body together; and
said clamping members being readily clamped and unclamped to connect and disconnect said front cover, said rear cover, and said magnetic body.

4,127,786

SYNCHRONOUS MACHINE WITH INNER ROTOR, EXCITED BY PERMANENT MAGNETS

Wolfgang Volkrodt, Bad Neustadt, Saale, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 19, 1977, Ser. No. 760,571

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608421

Int. Cl.² H02K 21/12

U.S. Cl. 310—156 **3 Claims**

1. In a synchronous machine including magnets and a rotor, said rotor being excited by said magnets and having a ferromagnetic shaft which extends throughout the axial length of said rotor, the improvement comprising said rotor further including:
at least two lamination substacks arranged on said shaft in the axial direction of said rotor, each of said substacks including:
laminated stack parts whose number corresponds to the number of poles of said machine;
slots adapted to receive a starter cage;
and a ferrite magnet arranged between said laminated stack parts and said shaft;
amagnetic support disks which rest against said substacks and are firmly mounted on said ferromagnetic shaft;
and means for connecting said lamination stacks and support disks in a frictionally connected and close fitting manner, said connecting means comprising axial bolts.

4,127,787

CHANGEABLE POLE THREE PHASE WINDING

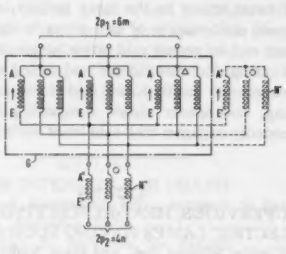
Herbert Auinger, Nuremberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 17, 1976, Ser. No. 658,455

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1975, 2506573

Int. Cl.² H02K 3/00

U.S. Cl. 310—184 **22 Claims**

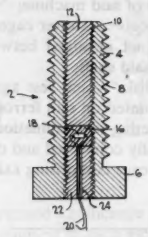


1. A three phase winding for a slotted electric machine which can be changed for a pole pair ratio $p_1 : p_2 = 3m : 2n$, where $p_1 : p_2$ is a fractional number with aliquant integral numerator and denominator and m and n are integers, comprising:
(a) a base winding which is formed by nine base winding branches each having the same number of series connected coils, each base winding branch having a beginning and an end;
(b) groups of three base winding branches being connected together at their beginnings to form three phases, said connections forming the three connecting points for the pole pair number $p_1 = 3m$;
(c) the ends of one base winding branch from each of the groups having their beginnings connected together, being connected together to form three phases and corresponding connecting points for the pole pair number $p_2 = 2n$;
(d) the machine having slots which are arranged with uniform pitch;
(e) said windings being disposed in said slots such that three coils sides which belong to the same phase for $p_2 = 2n$ and are equiphasal induced are arranged in three of the four slots which in the $p_2 = 2n$ pole pair slot-vector-star appear as vectors with the same direction and such that said three coil sides belong to different respective phase windings for the other pole pair number $p_1 = 3m$.

4,127,788
PIEZOELECTRIC STRESS INDICATOR FOR MINE ROOFS

Ralph N. Daugherty, Rte. 4, Box 54, Front Royal, Va. 22630

Filed Jul. 8, 1977, Ser. No. 814,018
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—328 4 Claims



1. A device for detecting deformation in rock strata comprising:

an open cylindrical casing having an inner threaded surface and an outer surface insertable in the strata;

external screw threads on said outer surface to rigidly couple said outer surface to the strata in which said casing is inserted;

a piezoelectric crystal stress sensor;

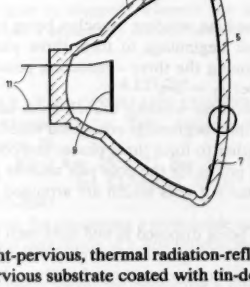
a block of resinous material in which said sensor is embedded, said block having external threads to rigidly couple said stress sensor to the inner surface of said casing to transmit deformation of said strata to said stress sensing means and to permit said stress sensor to be coupled to said casing after insertion of said casing in said solid; and

spacer means to axially locate said stress sensor within said casing, said spacer means comprising a solid cylinder threadedly engaged with said inner surface of said casing.

4,127,789
LIGHT-PERVIOUS, HEAT-REFLECTING FILTER AND ELECTRIC LAMPS HAVING SUCH A FILTER

Heiner Köstlin; Rüdiger Jost, and Hans Auding, all of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1977, Ser. No. 846,213
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2648878
Int. Cl.[2] G02B *1/10;* H01J *5/10, 61/40;* H01K *1/26*
U.S. Cl. 313—112 2 Claims

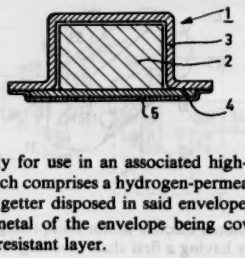


1. A light-pervious, thermal radiation-reflecting filter having a light-pervious substrate coated with tin-doped indium oxide, characterized in that on its side remote from the substrate the filter is coated with silicon dioxide selected from the group consisting of hydrolytic silicon dioxide and pyrolytic silicon dioxide.

4,127,790
HIGH-PRESSURE DISCHARGE LAMP

Gijsbert Kuus, and Adriaan J. de Ridder, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 20, 1977, Ser. No. 834,951
Claims priority, application Netherlands, Oct. 8, 1976, 7611137
Int. Cl.[2] H01J *61/26*
U.S. Cl. 313—174 3 Claims

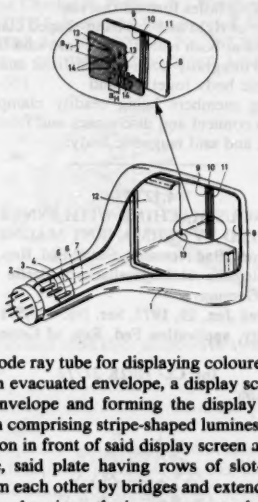


3. An assembly for use in an associated high-pressure discharge lamp which comprises a hydrogen-permeable envelope and a hydrogen getter disposed in said envelope, said hydrogen-permeable metal of the envelope being covered with a porous halogen-resistant layer.

4,127,791
CATHODE RAY TUBE SHADOW MASK WITH SLOTTED APERTURES

Johannes G. van Lent, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1976, Ser. No. 743,535
Claims priority, application Netherlands, Dec. 18, 1975, 7514744
Int. Cl.[2] H01J *29/07*
U.S. Cl. 313—403 1 Claim



1. In a cathode ray tube for displaying coloured pictures and comprising an evacuated envelope, a display screen on a wall part of the envelope and forming the display window, said display screen comprising stripe-shaped luminescent regions, a colour selection in front of said display screen and comprising a metal plate, said plate having rows of slot-like apertures separated from each other by bridges and extending parallel to the stripe-shaped regions; the improvement wherein the vertical pitches distance a_v between the centers of the successive apertures of a row have values according to the formula

$$a_v = C_1 (1 + C_2(x^2 - y^2))$$

wherein x and y are the coordinates on said colour selection electrode at right angles to and parallel to the rows of apertures, respectively, and C_1 and C_2 are determined as

$$C_1 = a_{vo}\frac{S_O}{S} + \frac{a_H}{a_{HO}},$$

wherein

a_{vo} is the vertical pitch in the center of the colour selection electrode,

S_0 is the eccentricity of the electron beams in the deflection plane in front of the center of the tube,

S is the eccentricity of the electron beams in the deflection plane for a given place x and y in the tube,

a_{HO} is the horizontal pitch in the center of the colour selection electrode, and

a_H is the horizontal pitch associated with x and y or the distance between two successive rows, and $C_2 = 1/RL_0$, wherein

R is the radius of the part of the display screen associated with x and y, and

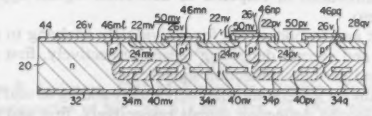
L_0 is the distance from the deflection plane to the center of the display screen.

4,127,792

LUMINESCENT SEMICONDUCTOR DISPLAY DEVICE INCLUDING GATE CONTROL ELECTRODES

Jōsuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,403
Claims priority, application Japan, Jun. 1, 1976, 51-64863
Int. Cl.² H05B *33/16*; H01L *33/00*
U.S. Cl. 313—500 **10 Claims**



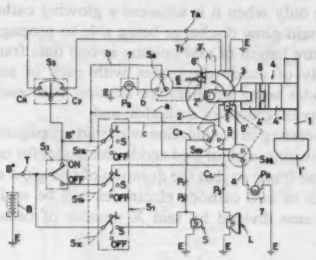
1. A semiconductor luminescent display device comprising, in combination, a semiconductor substrate of one type conductivity including a pair of opposite main faces, a plurality of semiconductor layers of the other type conductivity discretely disposed on one of said main faces to form a plurality of luminescent junctions therebetween, said plurality of semiconductor layers being arranged in a matrix including rows and a plurality of first main electrodes each disposed in ohmic contact with all the semiconductor layers arranged in a different one of said columns, a second main electrode disposed in ohmic contact with the other main face of said semiconductor substrate to cause principal currents to flow across said luminescent junctions between said first main electrodes and the second main electrode respectively, a plurality of light passing windows disposed in a selected one of said first and second main electrodes to face said luminescent junctions to pass light from the faced luminescent junctions, a plurality of control semiconductor layers of the other type conductivity disposed within said semiconductor substrate between said semiconductor layers arranged in said matrix and said second main electrode, each of said control semiconductor layers continuously extending through said semiconductor substrate along the associated row and having a plurality of passageways for said principal currents extending therethrough to lead to the luminescent junctions arranged in said associated row, and a plurality of gate electrodes disposed in ohmic contact with said control semiconductor layers respectively, each of said gate electrodes supplying a control voltage to the mating control semiconductor layer.

4,127,793

DEVICE FOR MAINTAINING A STOPPED VEHICLE IN BRAKED CONDITION

Saburo Kojima, 3-198, Yazumachi, Narashino-shi, Chiba-ken, Japan

Filed Jul. 20, 1977, Ser. No. 817,333
Claims priority, application Japan, Jul. 22, 1976, 51-86523
Int. Cl.² B60Q *1/14*
U.S. Cl. 315—80 **12 Claims**



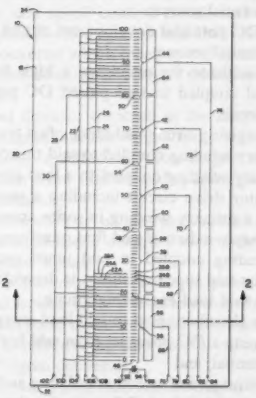
1. A device for maintaining a stopped vehicle in braked condition, which device comprises a foot brake provided with lock-engaging means, locking means adapted to come into engagement with said lock-engaging means while said foot brake is in its depressed position and thereby allow the foot brake to be retained in said depressed position, lock-actuating means serving to set said locking means selectively into its locked position or released position and headlight-switching means incorporated in appropriate portions of the circuit for said headlights and adapted to open said circuit upon detection of the fact that the locking means is in its locked position or close said circuit upon detection of the fact that the locking means is in its released position.

4,127,794

HIGH INTENSITY BAR GRAPH

Roger A. Frankland, Scottsdale, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 20, 1977, Ser. No. 844,002
Int. Cl.² H05B *37/00, 39/00, 41/00*
U.S. Cl. 315—169 R **9 Claims**



1. A gas discharge analog display comprising:

a substrate;

a faceplate sealed in spaced relation to said substrate to form a sealed envelope;

an ionizable gas within said envelope;

a plurality of groups of linear cathode electrodes mounted on said substrate within said envelope in succession along said substrate to form a column, each of said groups having X cathode electrodes;

means for initiating a glow discharge adjacent the first cathode electrode in each of said groups;

means for propagating a glow discharge along said cathode electrodes one by one sequentially in each of said groups, each of said cathode electrodes exhibiting a glow discharge only when it is adjacent a glowing cathode electrode, said glow discharge being able to propagate along the entire length of said column in one time frame;

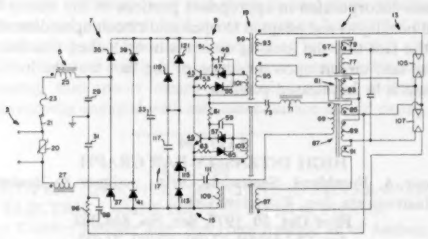
a plurality of anode electrodes with each of said anode electrodes being in operative relation with each of said plurality of groups of cathodes; and

means operating in conjunction with said propagating means for activating each of said anode electrodes for one half of said time frame so that the duration of said glow discharge on each of said cathode electrodes will be said one half time frame divided by said X number of cathode electrodes.

4,127,795
LAMP BALLAST CIRCUIT

William C. Knoll, Turbotville, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 19, 1977, Ser. No. 826,051
Int. Cl.[2] H05B *41/36;* H02M *5/458*
U.S. Cl. 315—210 **19 Claims**



13. A tuned oscillator ballast circuit comprising:

an AC potential source;

a pulsed DC potential development circuit coupled to said AC potential source;

a tuned oscillator for providing a high frequency output potential coupled to said pulsed DC potential development circuit;

a load energizing circuit including a first transformer having a primary winding coupled to said tuned oscillator and a secondary winding coupled to a load circuit;

an oscillator drive circuit including a second transformer having a primary winding in series connection with said secondary winding of said first transformer and a secondary winding coupled to said tuned oscillator whereby drive for said tuned oscillator is dependent upon current flow in said load energizing circuit;

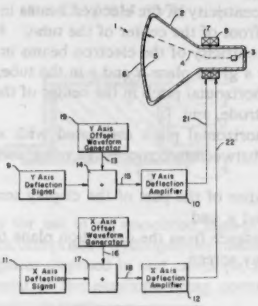
a rectifier circuit coupled to said load energizing circuit for developing a DC potential from said high frequency output potential; and

a charge storage and selective isolating and applying circuit shunting said pulsed DC potential development circuit and coupled to said rectifier circuit, said circuit selectively providing a charge in response to a decrease in said pulsed DC potential below a given reference level whereby said load circuit is energized by a substantially constant DC potential.

4,127,796
CRT DISPLAY ANTI-BURN CIRCUIT

Alan R. Henderson, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 23, 1977, Ser. No. 799,804
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—395 **10 Claims**


Y Axis Offset Waveform Generator
Y Axis Deflection Signal
Y Axis Deflection Amplifier
X Axis Offset Waveform Generator
X Axis Deflection Signal
X Axis Deflection Amplifier

1. In a cathode ray tube display system the combination comprising:

(a) a cathode ray tube having a sealed envelope which includes a faceplate having an inner surface coated with a phosphorescent compound;

(b) means in said envelope for generating an electron beam and projecting it at said coated surface;

(c) first and second means for deflecting said electron beam across said faceplate, said first and second means imparting movement to said electron beam in mutually orthogonal directions in response to deflection signals applied thereto;

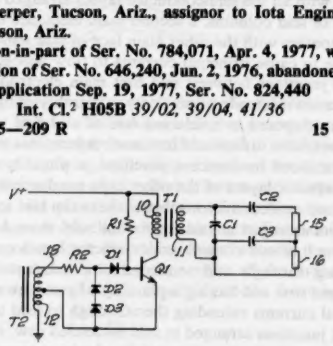
(d) first and second means for individually applying to said first and second deflecting means respectively, first and second periodic deflection signals; and

(e) means for generating, and individually adding to said first and second deflection signals respectively, first and second periodic out-of-phase offset signals, said first and second out-of-phase offset signals being of relatively low frequency and small magnitude with respect to the resultant of said first and second periodic deflection signals whereby the deviation of said beam due thereto is not perceptible to the human eye.

4,127,797
INVERTER OSCILLATOR WITH CURRENT FEEDBACK

Lloyd J. Perper, Tucson, Ariz., assignor to Iota Engineering, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 784,071, Apr. 4, 1977, which is a continuation of Ser. No. 646,240, Jun. 2, 1976, abandoned. This application Sep. 19, 1977, Ser. No. 824,440
Int. Cl.[2] H05B *39/02, 39/04, 41/36*
U.S. Cl. 315—209 R **15 Claims**



1. In a high frequency power supply system for supplying power to a gas discharge lamp load or the like, including

inverter means connected across a pair of direct-current input terminal means, said inverter means including an oscillator circuit including a first transistor having base, emitter and collector electrodes, and a first transformer having primary and secondary windings;

the improvement which comprises

(a) a second transformer (T2) having first (12; 27) and second windings;

(b) said first transistor (Q1) including an emitter-to-collector circuit connected in series with said primary winding (10) to define a series path which is connected across the input terminal means;

(c) a starter resistor (R1) connected at one end with the base electrode of said first transistor, the other end of said starter resistor being connected with one end of said primary winding;

(d) a second resistor (R2) and first diode means (D1) connected in series between one end of said second winding (13) and the base electrode of said first transistor, the other end of said second winding being connected with one of the emitter and collector electrodes of said first transistor;

(e) second diode means (D2, D3) connected across said second winding, the polarities of said first and second diode means being such that when said second winding has alternate states of energization, said second winding is connected in series with, and isolated from, the circuit defined between the base electrode and one of the emitter and collector electrodes of said first transistor, respectively; and

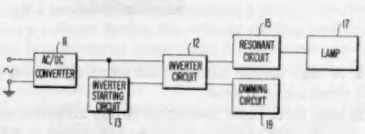
(f) means connecting said first winding (12; 27) in series with one (10; 11) of said primary and secondary windings of said first transformer (T1).

4,127,798

LAMP CIRCUIT

John E. Anderson, 4781 McKinley Dr., Boulder, Colo. 80302

Continuation of Ser. No. 671,863, Apr. 23, 1976, abandoned.
This application Nov. 4, 1977, Ser. No. 848,680
Int. Cl.[2] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **10 Claims**



1. In a system for operating gas discharge lamps, an inverter circuit for generating high frequency signals in response to a DC signal, said inverter circuit comprising:

(a) a transformer,

(b) switching means for controlling the direction of current flow in said transformer,

(c) current monitoring means for monitoring current flow through said transformer and for indicating when the current flow through the transformer reaches a predetermined value, which value is less than the current value realized as the transformer saturates, said current monitoring means including a voltage divider network, the voltage drop across said divider network being proportional to the current flow through said transformer.

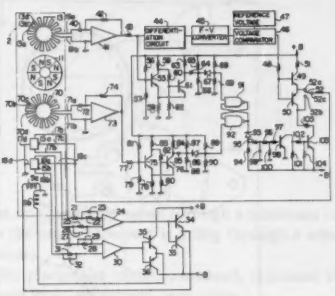
(d) means, responsive to said current monitoring means, for causing said switching means to interrupt current flow to said transformer when the current reaches said predetermined value whereby said transformer is prevented from saturating.

4,127,799

APPARATUS FOR DAMPING ROTATION OF TURNTABLE

Tsutomu Nakamura, and Ryuichi Koike, both of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 11, 1977, Ser. No. 823,654
Claims priority, application Japan, Aug. 16, 1976, 51-97070
Int. Cl.[2] H02P *3/10*
U.S. Cl. 318—373 **4 Claims**



1. An apparatus for damping the rotation of a turntable, comprising:

a motor having its drive shaft coupled with the turntable for driving the turntable, said motor having a rotor magnet composed of plural magnetic poles and fixed to said drive shaft, Hall-effect elements sequentially coupled magnetically to said poles of said rotor magnet for generating output signals having polarities corresponding to the polarities of said poles of said rotor magnet, stator coils to which the output signals of said Hall-effect elements are supplied for generating drive magnetic flux, and a first speed detector disposed in the magnetic field of said rotor magnet for generating a speed signal in accordance with the rotational speed of said rotor magnet;

a speed control circuit which has a reference signal source, to which the speed signal from said first speed detector is supplied, and which compares said speed signal with said reference signal so as to obtain a speed control signal;

an amplifier which receives and amplifies said speed control signal from said speed control circuit and supplies the amplified speed control signal to said Hall-effect elements;

a first signal converter which receives said speed signal from said first speed detector to convert said speed signal to a pulse signal;

a second speed detector disposed in the magnetic field of said rotor magnet for delivering a speed signal according to the rotational speed of said rotor magnet and having a phase different from that of said speed signal from said first speed detector;

a second signal converter which receives said speed signal from said second speed detector to convert said speed signal to a pulse signal;

a gate circuit which receives the output pulse signals from said first and second signal converters and which is cut off by said output pulse signal from said first signal converter and turned conductive by said output pulse signal from said second signal converter;

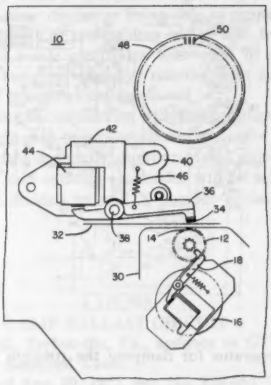
a switching circuit which receives the output signal of said gate circuit and is turned conductive by said output signal to deliver a control signal having a polarity opposite to that of said speed control signal from said amplifier; and

means for supplying said control signal from said switching circuit to said Hall-effect elements when the rotation of said motor is to be stopped.

4,127,800
MEANS FOR ADJUSTMENT OF SPEED OF PRIME MOVER

Donald E. Long; Robert J. Rushby, both of Waterloo, and Krantikumar V. Toraskar, Hamilton, all of Canada, assignors to NCR Canada Ltd - NCR Canada LTEE, Mississauga, Canada

Filed Dec. 30, 1976, Ser. No. 755,779
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—685 12 Claims



1. A method of controlling the speed of a prime mover comprising the steps of

generating a programmed reference signal of predetermined time duration;

generating a speed signal indicative of the actual speed of the prime mover in successive relationship with said reference signal;

generating a delay signal after initiation of the generation of each speed signal for determining the time duration of each of said speed signals; repeating said reference signal in duplicating manner for a desired number of times;

repeating said speed signal sequentially in alternate relationship with said reference signal for said desired number of times;

utilizing programmed memory for tracking the number of repeated speed signals and reference signals;

synchronizing said reference signals and said speed signals by clocking predetermined time periods therewith;

setting the programmed memory to indicate mode index of the prime mover,

connecting voltage indicating means with the output of said prime mover for receiving said speed signals and with said programmed memory for receiving said reference signals after completion of said desired number of times, observing differences in time periods between said reference signals and said speed signals by reading the range of voltage indication; and

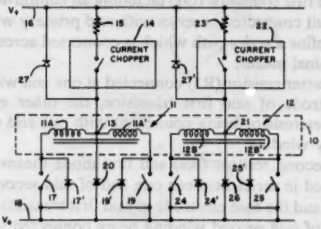
adjusting the width of said speed signals to equal the width of said reference signals until a steady voltage indication is observed.

4,127,801
POWER CHOPPER SUPPLY FOR A BIFILAR WOUND STEPPING MOTOR

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 16, 1977, Ser. No. 796,950
Int. Cl.[2] H02K *37/00*
U.S. Cl. 318—696 10 Claims

1. A stepping motor energizing circuit for controlling the flow of energy from a unidirectional source of power to a stepping motor having at least one bifilar winding formed into two coils that are inductively associated with each other, a switching device connected in series with each coil and the source of power and being shiftable between states of conduction and non-conduction, means for causing one of said switching devices to have a conducting state and the other a non-conducting state, chopper means connected in series between said winding and the source of power and including means for alternately connecting and disconnecting the winding to the

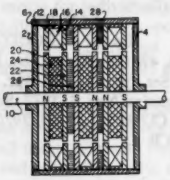


power source with each connection causing the energization of one coil, and means for forming a path for the induced circulating current created in the coil having the conducting switching device when the chopper means effects disconnection of said one coil from the source of power with the said path including the other coil whereby the induced current flows in both coils that are inductively associated with each other.

4,127,802
HIGH TORQUE STEPPING MOTOR

Milton H. Johnson, 13022 Maxwell Rd., Cypress, Tex. 77429

Filed Apr. 6, 1977, Ser. No. 785,193
Int. Cl.[2] H02K *37/00*
U.S. Cl. 318—696 5 Claims



1. A high torque bidirectional stepping motor, comprising:

a non-magnetic shaft;

at least three rotor assemblies firmly affixed coaxially to said shaft with non-magnetic spacers between adjacent rotor assemblies, said rotor assemblies each comprising

a thin annular permanent magnet surrounding the shaft with its magnetic polarity aligned parallel to the axis of the shaft,

a pair of identical disk-like rotor pole pieces of high induction magnetic material having a plurality of uniform teeth around the circumference of each rotor pole piece, one of said rotor pole pieces being disposed on each face of said permanent magnet, wherein the teeth in said rotor pole piece project above the surface of said permanent magnet;

at least three stator assemblies corresponding to the rotor assemblies, with non-magnetic spacers between adjacent stator assemblies, each of which stator assemblies comprises

a pair of spaced identical stator pole pieces of magnetically soft high induction material having inwardly projecting teeth equal in number to the teeth on the corresponding rotor pole pieces and complementary in shape to the teeth on said rotor pole pieces, wherein the teeth

of each stator pole piece are aligned with the teeth of each corresponding rotor pole piece,

a solenoid coil disposed between said stator pole pieces, and

a stator cap comprising a ring of magnetically soft high induction material bounding the outer surface of the solenoid coil;

and pulsing means to energize each solenoid coil in a predetermined sequence;

wherein the permanent magnets in the rotor assemblies are oriented so that like magnetic poles face one another,

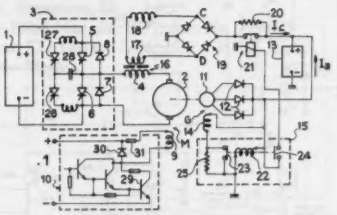
and wherein each rotor assembly is rotationally misaligned from the adjacent rotor assembly such that each tooth in the one rotor assembly is displaced from the corresponding tooth in the nearest pole piece in the adjacent rotor assembly by an angle equal to $(360/N_xP)$ degrees, where "N" is the number of teeth on each rotor pole piece and "P" is the number of stator assemblies employed in the motor.

4,127,803

CHARGING CIRCUIT FOR AN AUXILIARY BATTERY ON AN ELECTRICALLY-PROPELLED VEHICLE

Michel Etienne, Valmondois, France, assignor to Automobiles Peugeot, Paris, France

Filed May 19, 1977, Ser. No. 798,309
Claims priority, application France, May 26, 1976, 76 15959
Int. Cl.[2] H02J *7/00*
U.S. Cl. 320—2 **6 Claims**



1. In a circuit for charging an auxiliary battery for a vehicle driven by an electric motor supplied with current by a main battery through a supply circuit comprising a device for chopping the battery voltage during the vehicle starting and braking stages, the improvement comprising a transformer having a primary winding which is inserted in the supply circuit of the motor and is connected to be supplied with current by said device for chopping the voltage of the main battery, the transformer having a secondary winding which is connected to supply current to the auxiliary battery by a circuit including a rectifier device.

4,127,804

ELECTROSTATIC ENERGY CONVERSION SYSTEM

Onezime P. Breaux, Trotwood, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 24, 1976, Ser. No. 689,272
Int. Cl.[2] H02N *1/00*
U.S. Cl. 322—2 A **8 Claims**

1. An alternating current electrostatic energy converter comprising:

a. a first and a second variable capacitor, each having a maximum and a minimum capacitance, connected in paired opposition and inversely ganged such that one capacitor passes through a maximum capacitance as the other capacitor is going through a minimum capacitance;

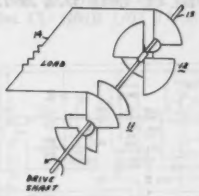
b. means for placing an initial and contained electrical charge on the said first and second capacitors;

c. means for actuating the said capacitors through their maximum and minimum capacitance passing contained charge between them; and

d. means for extracting power from the said capacitors.

8. A synchronous alternating current electrostatic motor comprising:

a. a first and a second variable capacitor each having a maximum and a minimum capacitance, connected in paired opposition inversely ganged on a common shaft



such that one capacitor passes through a maximum capacitance as the other capacitor is going through a minimum capacitance;

b. means for placing an initial, contained, electrical charge on the said first and second capacitors;

c. means for placing an alternating potential voltage on the said first and second capacitors; and

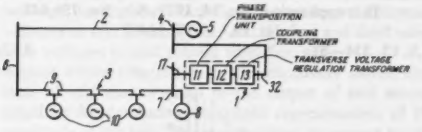
d. means for connecting a mechanical load to the said shaft.

4,127,805

DEVICE FOR CONNECTING TUNED POWER TRANSMISSION LINE TO A.C. NETWORK

Eduard S. Lukashov, and Marina K. Yakobson, both of Novosibirsk, U.S.S.R., assignors to Sibirsky Nauchno-Issledovatelsky Institut Energetiki, Novosibirsk, U.S.S.R.

Filed Dec. 28, 1976, Ser. No. 755,040
Int. Cl.[2] H02J *3/24*
U.S. Cl. 323—120 **6 Claims**



1. A device for connecting a tuned power transmission line to an a.c. network, comprising:

a phase transposition unit which is connected to the a.c. network and effects a phase shift of voltage through an angle which is a multiple of the natural phase shift between voltages of opposite phases;

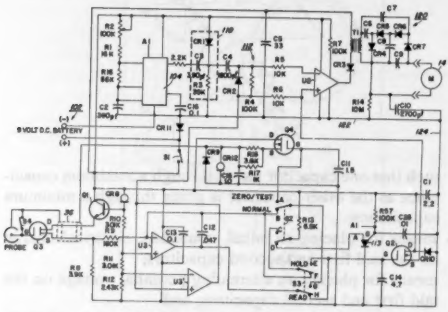
a coupling transformer which is connected to said phase transposition unit and matches the voltages of said tuned power transmission line and the a.c. network and effects a voltage phase shift which is a multiple of 180°; and

a transverse voltage regulation transformer which is connected to said coupling transformer and said tuned power transmission line to smoothly change the voltage phase shift under load.

4,127,806
SHIELDED ELECTROMETER WHOSE OUTPUT IS USED TO CONTROL WIDTH OF PULSES FED BACK TO THE SHIELD AND ASSOCIATED BATTERY TEST CIRCUITRY

David R. Shuey, Webster, and Robert J. Slomcenski, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1977, Ser. No. 783,910
Int. Cl.[2] G01R *5/28, 29/12*
U.S. Cl. 324—32 **7 Claims**



1. In an electrometer for measuring electrostatic potential levels, with the electrometer including a probe for receiving charge from a test surface, said probe having a charge receiving sensor element and a surrounding shield, wherein the improvement comprises:

means for producing electrical pulses of a given pulse width;

a transformer;

means for coupling said pulses to the transformer;

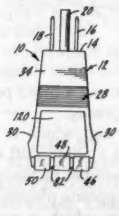
means for applying the output of the transformer to the probe shield thereby rendering said probe substantially spacing insensitive; and

means for regulating the width of the pulses to the transformer in accordance with the amount of charge sensed by the probe sensor element.

4,127,807
HAND-HELD CIRCUIT TESTER WITH LENS ARRANGEMENT FOR VIEWING INDICATOR LAMPS HOUSED WITHIN THE TESTER

Marvin J. Peplow, and Peter M. Wells, Jr., both of Sycamore, Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Division of Ser. No. 603,036, Aug. 8, 1975, Pat. No. 4,034,284.
This application Jan. 14, 1977, Ser. No. 759,449
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **3 Claims**

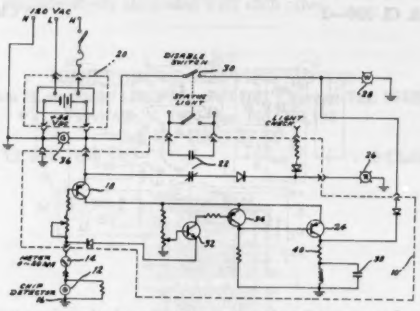


1. In a hand-held receptacle wiring tester, a housing made up of two side-by-side housing halves comprising a casing and a cover which form the top, bottom, side walls and ends of the housing, two generally parallel flat blades and a ground blade mounted within the housing and protruding from one end thereof in fixed positional relationship for insertion into a wall receptacle, separate compartments at the other end of the housing, separated by divider walls within said housing, each of the housing halves defining one-half of each of the separate compartments, a plurality of indicator lamps at the other end of the housing, one in each of the compartments, electrical connections between the lamps and the blades so that the lighting of the lamps and various combinations of lamps indicates respective predetermined wiring conditions of a wall receptacle into which the terminal blades are inserted, each of the compartments opening fully on the top, end and bottom of the housing but not on the side walls to form a single, continuous aperture wrapping around the end of the housing so as to otherwise expose the lamps, each of the three-sided openings in its respective compartment having a three-sided generally U-shaped lens disposed therein to form an interlocking arrangement between each leg of the U-shaped lens and the inside of the housing so that each lamp can be viewed from the top and bottom of the tester as well as from the end.

4,127,808
ENGINE CHIP DETECTOR

Robert D. Sproul, Groveland, and Guillermo E. Todd, Peabody, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 7, 1977, Ser. No. 840,354
Int. Cl.[2] G01R *27/02*
U.S. Cl. 324—65 R **5 Claims**



1. An engine chip detection system comprising: a power supply; a chip detection means; electrical circuit means connecting the power supply and chip detection means including, a voltage divider network, means for sensing a decrease in resistance and gate means for switching on a signal means, means for presetting the threshold level of the said gate means, means for isolating transient signals of less than a predetermined period of duration, and means for sensing and identifying an open circuit.

4,127,809
PULSE MODULATED WAVE MEASURING DEVICE

Shoji Niki, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Nov. 29, 1977, Ser. No. 855,583
Claims priority, application Japan, Dec. 8, 1976, 51-148084
Int. Cl.[2] G01R *25/02*
U.S. Cl. 324—78 R **9 Claims**

1. A pulse modulated wave measuring device comprising:

means for detecting and storing the rise of a pulse modulated wave to be measured;

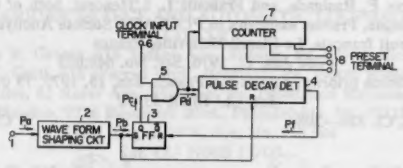
gate means controlled by the detected output from the detecting means to open;

a pulse decay detector connected to the output side of the gate means to provide an overflow signal after the elapse of a predetermined time selected to be longer than the carrier cycle of the pulse modulated wave to be measured and shorter than its pulse interval;

a pulse width counter connected to the output side of the gate means;

a clock pulse source for applying a clock pulse of a known frequency to the pulse decay detector and the pulse width counter through the gate means;

reset means for resetting the pulse decay detector upon every rise or fall of the carrier of the pulse modulated wave;



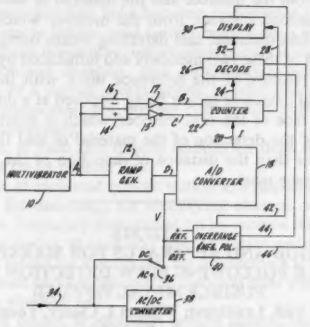
means for resetting the detecting and storing means with the overflow signal of the pulse decay detector to close the gate means; and

means for subtracting from the count value of the pulse width counter the numerical value corresponding to the predetermined time.

4,127,810
DIGITAL VOLTMETER

Donald A. Purland, New Hope, Minn., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Mar. 21, 1977, Ser. No. 779,479
Int. Cl.[2] G01R *17/06, 19/22;* **H03K** *13/02*
U.S. Cl. 324—99 D **10 Claims**

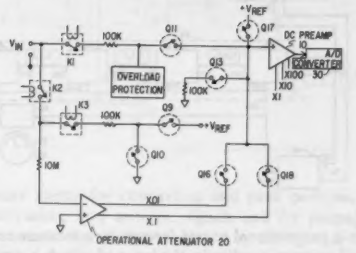


1. Apparatus for providing a digital display of a measured analog signal including a periodic source of reference signal in ramp form starting at a negative potential and increasing to a given positive potential, an analog signal to be measured, a first comparator circuit connected to said ramp signal and analog signal and providing a given output level as long as the ramp signal is less than the analog signal, a source of clock signals, first logic means connected to said first comparator and clock source for providing clock signals during the period that said first comparator is at said given level, a second comparator circuit connected to said ramp signal and ground potential and providing a given output level until said ramp signal reaches ground potential, second logic means connected to said second comparator and first logic means for providing clock signals during the period that said ramp signal is above ground potential and less than said analog signal, counting and display means connected to said second logic circuit, input terminals, a rectifier connected to said input terminals, switch means connected to said input terminals, rectifier and first comparator circuit, said rectifier comprising a pair of operational amplifiers, a first diode connected between the output of one amplifier and an input of the other, and a second diode connected between the output and input of said one amplifier.

4,127,811
AUTO-CALIBRATING VOLTMETER

Albert B. Gookin, Jr.; Vernal D. Forbes, and Stephen B. Venzke, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 3, 1976, Ser. No. 720,486
Int. Cl.[2] G01R *1/02, 17/06*
U.S. Cl. 324—130 **4 Claims**



1. A voltmeter responsive to an input signal comprising:

first and second amplifiers each having an input and an output and each having a substantially linear transfer characteristic between the input and output thereof;

source means for supplying first, second and third reference voltages;

first switching means for selectively applying either the first or the second reference voltage to the input of said first amplifier;

second switching means for selectively applying either the first reference signal, the third reference signal, or the input signal to the input of said second amplifier;

analog to digital converter means having an input selectively coupled to the output of the first or second amplifier and an output for generating a digital signal representative of a signal applied to the input thereof;

means for selectively coupling the input of said first amplifier to the output of said second amplifier during the selective application of a reference signals by said second switching means;

a memory having an input and an output with the input coupled to the output of said converter means for selectively storing signals applied to the input thereof representative of the application of the first and second reference voltages to said first amplifier and the first and third reference voltages to said second amplifier; and

processor means responsive to the selectively stored contents of said memory and to the output of said second amplifier for producing an output representative of the amplitude of the input signal normalized to correct for the offset and gain errors in said second amplifier.

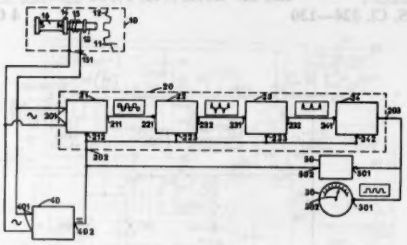
4,127,812
SELF-POWERED SYSTEM FOR MEASURING ROTATION SPEEDS

Michel P. Baliguet, Suresnes, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Feb. 23, 1977, Ser. No. 771,339
Claims priority, application France, Mar. 19, 1976, 76 08622
Int. Cl.[2] G01P *3/48*
U.S. Cl. 324—174 **5 Claims**

1. In a magneto-electrical tachometer having a rotation pick-up comprising a wheel having teeth of a ferromagnetic material adapted to be connected to a rotating body, the rota-

tional speed of which is to be measured, at least one electromagnetic transducer with a permanent magnet adjacent the toothed circumference of the wheel and is actuated by the passage of the teeth of said wheel therepast to deliver an alternating electrical current, the frequency of which is proportional to the rotation speed of the wheel; a conversion means having an input for direct current from a power supply, an input for alternating current from said transducer, and an output which delivers a current, the average amplitude of



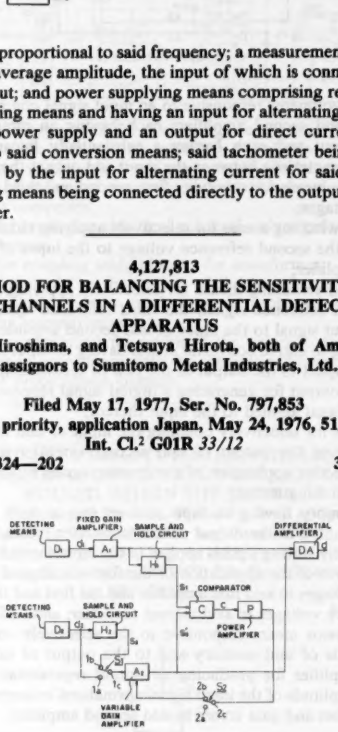
which is proportional to said frequency; a measurement device for said average amplitude, the input of which is connected to said output; and power supplying means comprising rectifying and filtering means and having an input for alternating current for the power supply and an output for direct current connected to said conversion means; said tachometer being characterized by the input for alternating current for said power supplying means being connected directly to the output of said transducer.

4,127,813

METHOD FOR BALANCING THE SENSITIVITY OF TWO CHANNELS IN A DIFFERENTIAL DETECTION APPARATUS

Tatsuo Hiroshima, and Tetsuya Hirota, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed May 17, 1977, Ser. No. 797,853
Claims priority, application Japan, May 24, 1976, 51/060292
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—202 **3 Claims**



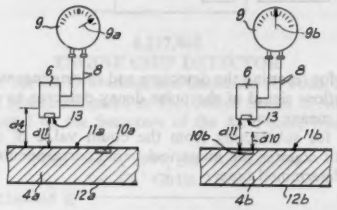
1. A method for balancing the sensitivity of two channels which process intermittently-appearing pulse waves in a differential detection apparatus, said method comprising feeding each of two reference pulse wave signals to respective sample and hold circuits in each channel, each of said sample and hold circuits being adapted to hold the peak value of the input signal for a predetermined time, feeding the respective output signals of said two sample and hold circuits to a comparator, at least one of said output signals being made to pass through a variable gain amplifier, feeding the output signal of said comparator to a power amplifier, and feeding the output signal of said power amplifier back to said at least one variable gain amplifier so that the gain function of said at least one variable gain amplifier will be automatically adjusted to cause the output signal of said power amplifier to be equal to zero.

4,127,814

DETECTOR FOR DISCRIMINATING BETWEEN TWO METALS ON A RELATIVELY MOVING MEMBER BY BEING POSITIONED AT A DISTANCE WHERE IT SENSES ONE BUT NOT THE OTHER

Herve P. Rasigade, and Francois L. L'Henoret, both of Compiegne, France, assignors to POCLAIN, Societe Anonyme de droit francais, Le-Plessis-Belleville, France

Filed Jan. 12, 1976, Ser. No. 648,023
Claims priority, application France, Jan. 15, 1975, 75 01154
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—208 **7 Claims**



1. A detector for detecting at least one relative position of two members which are movable with respect to each other, said detector comprising at least one reference mark made on the structure of a first of the two members, said first of the two members being formed of steel, said reference mark being of substantially punctual type and formed of bronze means capable of detecting the material of said first member within a first distance from the member and the material of said mark only within a second distance from the member which is smaller than said first distance, said detecting means being secured to the second of these two members and influenced by the coincidence of position of the reference mark with the detecting means, said detecting means being disposed at a distance from the outer face of the first member which is shorter than the distance of the detection of the material of said first member and greater than the distance of detection of the material of said reference mark.

4,127,815

METHOD AND APPARATUS FOR MARKING AN ARTICLE FOLLOWING FLAW DETECTION USING A FUSIBLE METAL POWDER

Joseph P. Vild, Lyndhurst; William I. Cleary, Youngstown, and Donald P. Fox, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 471,183, May 20, 1974, abandoned. This application Sep. 29, 1976, Ser. No. 727,793
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—241 **7 Claims**

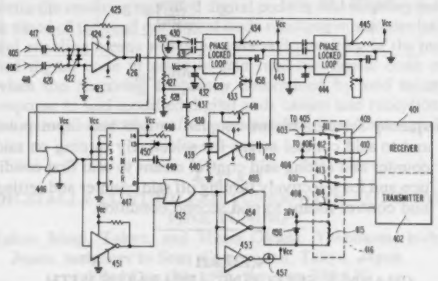
1. A method of marking the location of a flaw in an article comprising the steps of:
(a) heating the article;
(b) inspecting the article for flaws;

(c) locating an area with a flaw;
(d) spraying a fusible powder onto the flaw while the article is at a temperature above the fusing point of the powder, the powder when fused being of a visibly different color than the wall of the article; and,
(e) fusing the powder on the located area to visibly indicate the location of a detected flaw.

4,127,816
CARRIER DETECT AND AUTOMATIC LOOPBACK CIRCUIT

Clair R. Grosso, 616 Tasker Ave., Folsom, Pa. 19033; Richard M. Gatti, 618 Warren Blvd., Broomall, Pa. 19008; Robert J. Miles, 61 Rorer Ave., Hatboro, Pa. 19040, and Raymond D. DiSandro, 9776 Roosevelt Blvd., Philadelphia, Pa. 19115

Filed Aug. 2, 1976, Ser. No. 710,584
Int. Cl.[2] H04B *1/00*
U.S. Cl. 325—67 **7 Claims**



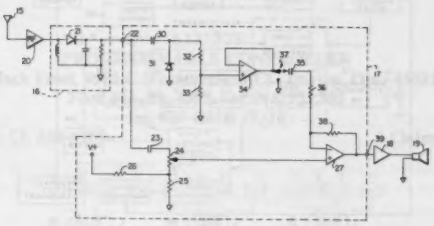
1. In a full duplex data transmission system having a master station, at least one remote station, and respective transmit and receive communication links between said master station and each said remote station, said system employing a modulation scheme wherein transmitted information occurs in signal bursts of predetermined duration, said bursts being separated by occurrence of a carrier signal having at least one distinctive frequency component not present during said bursts, testing apparatus comprising:
(a) means, at each said remote station, for detecting signals present on its receive link;
(b) means, at each said remote station and responsive to said means for detecting, for identifying absence of said distinctive frequency component on its receive link;
(c) timing means, at each said remote station and responsive to said means for identifying, for producing a logical pulse for at least said predetermined duration after identification of said absence; and
(d) switch means, at each said remote station, energized by the associated means for identifying and disabled by said logical pulse from the associated timing means, for interconnecting the transmit link with its corresponding receive link independently at each said remote station, thereby to form a loop back to said master station from a remote station at which said absence has been identified.

4,127,817
TRANSMITTER DETECTING APPARATUS

Allan D. Bell, Jr., Annandale, Va., assignor to Dektor Counterintelligence & Security, Inc., Springfield, Va.

Filed Jun. 17, 1976, Ser. No. 697,107
Int. Cl.[2] H04B *1/00*
U.S. Cl. 325—364 **6 Claims**

1. An apparatus for determining the presence of an eavesdropping device by establishing a regenerative feedback loop with the device, the device being of a type having a transducer responsive to acoustic signals, means for modulating a carrier signal with the transduced acoustic signals, and means for transmitting the modulated signals in the form of low power electromagnetic signals, the apparatus being usable in an environment subject to other electromagnetic signals of greater power, and comprising
antenna means for receiving electromagnetic signals;
broad-band detector means for demodulating signals received by said antenna means;
circuit means including amplifier circuit means for selecting and amplifying only peak portions of the transduced acoustic signals demodulated by said detector means; and

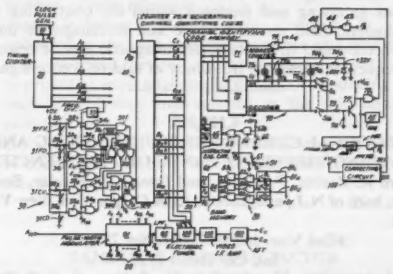


transducer means for converting said peak portions, after amplification, into acoustic signals and for propagating said acoustic signals for reception by the eavesdropping device to establish a regenerative loop, the presence of said device being manifested by a perceptible tone from said transducer means.

4,127,818
METHOD OF AND APPARATUS FOR TUNING AN AFT-CONTROLLED ELECTRONIC TUNER TO A DESIRED FREQUENCY

Takao Mogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 10, 1976, Ser. No. 740,753
Claims priority, application Japan, Nov. 20, 1975, 50-139513
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—418 **18 Claims**

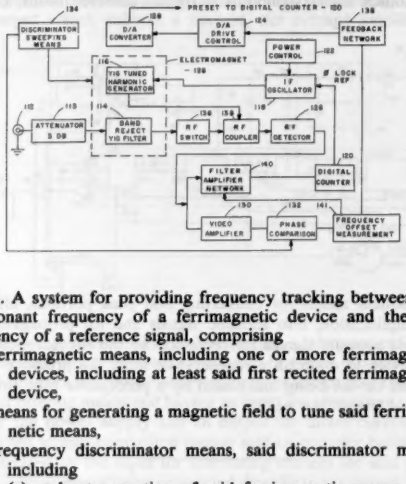


1. A method of tuning an electronic tuner of the type having a voltage-controlled tuning element to a selected one of plural broadcast frequencies, wherein a selected one of plural control voltages, which gradually build up to respective control voltage levels, is applied to said tuning element to tune said tuner to a corresponding broadcast frequency, comprising the steps of subjecting said tuner to an automatic fine tuning operation during the interval that said selected control voltage builds up to its control voltage level whereby said selected control voltage is varied from its control voltage level by said automatic fine tuning operation as a function of the frequency pulled in thereby; and reapplying said selected control voltage to said tuning element at a time delayed from the initial application thereof.

4,127,819
FREQUENCY DISCRIMINATOR APPARATUS

William J. Keane, 3599 Ensalmo Ave., San Jose, Calif. 95118

Division of Ser. No. 418,232, Nov. 23, 1973, Pat. No. 3,921,085.
This application Nov. 13, 1975, Ser. No. 631,708
Int. Cl.[2] H04B *1/16*; H03B *3/08*
U.S. Cl. 325—423 36 Claims



1. A system for providing frequency tracking between the resonant frequency of a ferrimagnetic device and the frequency of a reference signal, comprising

ferrimagnetic means, including one or more ferrimagnetic devices, including at least said first recited ferrimagnetic device,

means for generating a magnetic field to tune said ferrimagnetic means,

frequency discriminator means, said discriminator means including

(a) at least a portion of said ferrimagnetic means, said portion including at least one ferrimagnetic device,

(b) means for applying said reference signal to said portion of said ferrimagnetic means,

(c) means coupled to said portion of said ferrimagnetic means for electronically sweeping the frequency of said portion of said ferrimagnetic means over a frequency range relative to the frequency of said reference signal,

(d) detector means receiving an output from said portion of said ferrimagnetic means,

(e) timing relationship comparison means connected to said sweeping means and to the output of said detector means to generate a feedback signal, and

means receiving said feedback signal for controlling said magnetic field means to tune said ferrimagnetic means whereby said first recited ferrimagnetic device resonant frequency tracks the frequency of said reference signal.

4,127,820
ELECTRICAL CIRCUIT FOR MULTIPLEXING AND DIVIDING DIFFERENT BANDS OR FREQUENCIES

Howard R. Beelitz, Princeton, and Donald R. Preslar, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,878
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—459 8 Claims

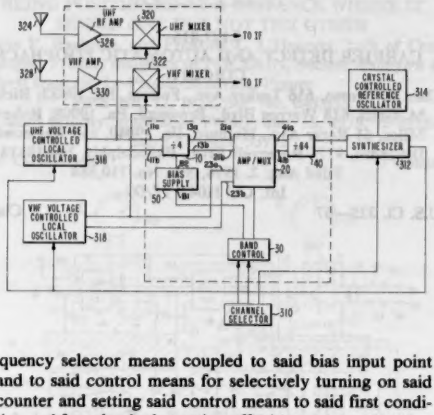
1. The combination comprising:

a first input terminal adapted to receive signals in a first frequency range,

a second input terminal adapted to receive signals in a second frequency range, different from said first frequency range;

a divide-by-N counter having an input coupled to said first input terminal and having an output at which are produced signals having a frequency of 1/N the frequency of its input signals; said counter having a bias input point for controlling its turn on and turn off;

an amplifying means having a first input coupled to said counter output and a second input coupled to said second input terminal; said amplifying means having an output terminal and also having a control means settable to a first condition for enabling the production at said output terminal of signals responsive only to the signals at said first input terminal; and settable to a second condition for enabling the production at said output terminal of signals responsive only to the signals at said second input terminal; and

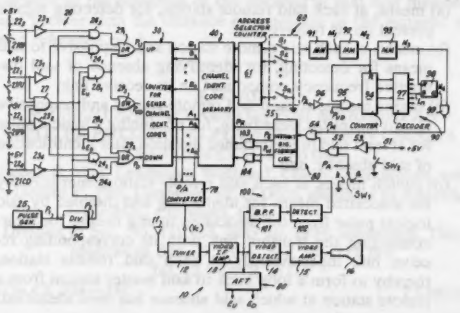


frequency selector means coupled to said bias input point and to said control means for selectively turning on said counter and setting said control means to said first condition and for selectively turning off said counter and setting said control means to said second condition.

4,127,821
CHANNEL SELECTING APPARATUS WITH AUTOMATIC REWRITING OF CHANNEL IDENTIFYING CODES IN A MEMORY

Hisao Okada, Yokohama, and Takao Mogi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 4, 1977, Ser. No. 784,599
Claims priority, application Japan, Apr. 5, 1976, 51-38007
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—464 11 Claims



1. A channel selecting apparatus for a television receiver having an electronic tuning tuner for determining a receiving frequency in accordance with an analog control signal applied thereto: said channel selecting apparatus comprising pulse generating means for generating sweep pulses; counting means for counting said sweep pulses and providing changing digital codes in correspondence with the changing count of said counting means; memory means having a plurality of addresses for storing respective digital codes each identifying a respective channel; addressing means actuable for selectively activating each of said addresses in the memory means; digital-to-analog converting means for converting each digital code provided by said counting means into a respective analog control signal for said tuner; memory control means selectively

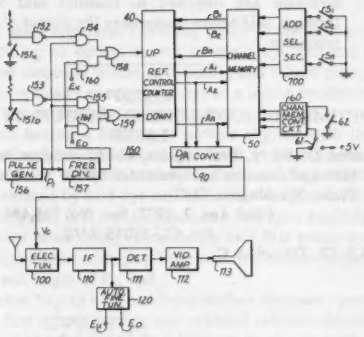
disposable in a programming mode and a channel selecting mode, said memory control means, when in said channel selecting mode, adopting the count of said counting means to a channel identifying digital code read out from the address in said memory means which is then activated by said addressing means; write control means operable, when said memory control means is in said programming mode, to cause writing at an address in said memory means then activated by said addressing means of the digital code then being received from said counting means; means for detecting deviation of the receiving frequency, as established in response to said analog control signal, from the transmitted frequency of the broadcast signal then being received; automatic fine tuning means responsive to a detected deviation of said established receiving frequency from said correct receiving frequency for modifying the digital code provided by said counting means to said digital-to-analog converting means in the sense for removing said deviation; rewriting means operative in said channel selecting mode when said deviation exceeds a predetermined amount, to rewrite the resulting modified digital code in said memory means in place of the read out digital code resulting in said deviation; and enabling means which permits said rewriting of the modified digital code in place of said read out digital code only when the receiving frequency determined by said tuner in response to said modified digital code causes said reception by the television receiver of a corresponding broadcast signal.

4,127,822

DIGITALLY CONTROLLED TUNER WITH AUTOMATIC FINE TUNING

Takao Mogi, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 20, 1976, Ser. No. 752,427
Claims priority, application Japan, Dec. 24, 1975, 50-155640
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—464 **7 Claims**



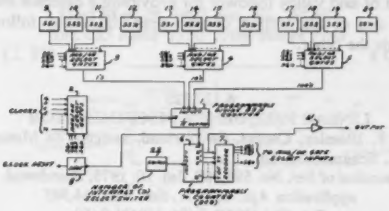
1. A channel selecting apparatus comprising an electronically tuned tuner, a reversible counter having an UP input terminal and a DOWN input terminal to receive pulses to cause said counter to count UP and DOWN, respectively, digital-to-analog converter means connected to said counter to receive digital count from the latter and to convert the same to an analog signal to control the tuning of said tuner, an automatic fine tuning circuit comprising means to generate automatic fine tuning control signals when said tuner is tuned within an automatic fine tuning range centered about a channel frequency, said signals including an up-tuning control signal when said tuner is tuned within said range but below the channel frequency in that range and a down-tuning control signal when said tuner is tuned within said range between the channel frequency in that range and an upper frequency of that range, a source of first pulses having a predetermined frequency, first connection means for selectively channeling said first pulses to said UP and DOWN input terminals of said counter for bringing said tuner from one channel to another, a source of second pulses having a frequency lower than that of said first pulses, and second connection means for selectively channeling said second pulses to said UP and DOWN input terminals, said automatic fine tuning circuit being connected to said second connection means to cause said second connection means to transmit said second pulses to said UP input terminal in response to said up-tuning control signal and to transmit said second pulses to said DOWN input terminal in response to said down-tuning control signal.

4,127,823

PROGRAMMABLE CONTROLLER

R. Jack Frost, 4961-C Westmoreland Ct., Dayton, Ohio 45431

Filed Feb. 23, 1977, Ser. No. 771,595
Int. Cl.[2] G01R *11/16*
U.S. Cl. 328—130 **2 Claims**



1. An immediately reprogrammable programmable controller for providing a determinable sequence consisting of a determined number of adjustable determined time intervals comprising:

a. a clock circuit having a continuous running oscillator and resettable dividers providing a plurality of resettable continuous determined time intervals in units and fractions thereof of seconds, minutes and hours;

b. a plurality of adjustable switches for setting determined decimal time intervals in units of seconds, minutes and hours and providing a binary coded decimal output;

c. a plurality of and/or select gate circuits cooperating with the said switches;

d. a number of intervals select switch for setting the said number of time intervals;

e. means including a programmable divide by N counter cooperating with the said and/or select gate circuits, the said clock, and the said number of intervals select switch to provide a sequential output signal corresponding to the said decimal time intervals set in the said adjustable switches; and

f. means cooperating with the said programmable divide by N counter for resetting the said resettable dividers of the clock circuit.

4,127,824

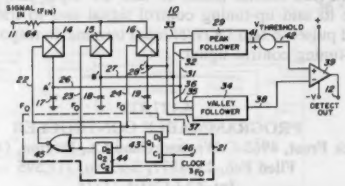
SAMPLING FILTER-DETECTOR

Robert McK. Bennett, Jr., West Dundee, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1977, Ser. No. 784,211
Int. Cl.[2] H03K *9/06, 17/16*
U.S. Cl. 328—138 **12 Claims**

1. A sampling filter-detector circuit comprising an input signal circuit for certain frequencies including a fundamental frequency, resistor means in series with said input signal circuit and having an output, three multiplier means connected to the output of the resistor means, each of said multiplier means including an output and a multiplier input, an individual capacitor connected to each of the outputs of the respective multipler, each of said capacitors being connected to a reference voltage, means connected to each of said multipliers for energizing same in a succession of three equal intervals whose total duration equals the period of said fundamental frequency, a

peak voltage follower having an input and an output, the input of which is connected to each of said capacitors, a valley voltage follower having an input and an output the input of which is connected to each of said capacitors, and comparator



means coupled to the output of said peak follower and the output of said valley follower for providing a detector output when one of the outputs of said peak and valley followers exceeds the other.

4,127,825

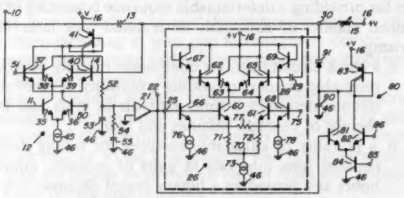
LINEAR FREQUENCY DISCRIMINATOR

Peter F. Blomley, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 594,908, Jul. 10, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 784,985

Int. Cl.[2] H03D *3/06*; H04N *9/50*

U.S. Cl. 329—103 **12 Claims**



1. A linear frequency discriminator comprising:

(a) a phase detector having a pair of inputs and an output, signals at the output being an indication of the phase difference between signals applied to the pair of inputs and one of said inputs of said phase detector being adapted to receive a modulated input signal;

(b) a tuned circuit including a variable reactance and having an output connected to the other of said pair of inputs of said phase detector, said tuned circuit further having a signal input for receiving said modulated input signal, and a control input for receiving a control signal derived from the signals at said output of said phase detector to adjust said variable reactance and retune the tuned circuit to track the frequency of said modulated input signal;

(c) said variable reactance including a fixed capacitive means and an amplifier means connected so that the reactance of said variable reactance depends on the current gain of said amplifier means, said current gain of said amplifier means varying as a function of said control signal, said tuned circuit having a nonlinear relationship between the resonant frequency thereof and the value of said variable reactance, and said amplifier means including a nonlinear element for counteracting said nonlinearity in said tuned circuit to provide a signal at said output of said phase detector which varies linearly with changes of phase in said modulated input signal; and

(d) means for connecting signals at said output of said phase detector to said control input of said tuned circuit and for providing the output signal of the linear frequency discriminator.

4,127,826

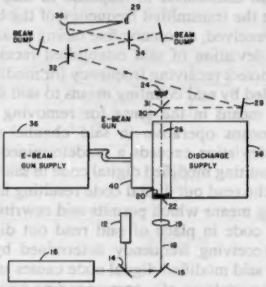
GAIN SPIKE AND MODE CONTROL FOR SPIKED LASERS

Charles M. Cason, III, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 13, 1977, Ser. No. 796,581

Int. Cl.[2] H01S *3/10*

U.S. Cl. 331—94.5 C **5 Claim.**



1. A gain-spike and mode control system for lasers comprising:

(a) A cw HeNe laser disposed for transmitting a first beam in a first direction;

(b) A cw CO_2 laser disposed for transmitting a second beam in a second direction;

(c) dichroic means for reflecting said first beam in a third direction and for transmitting said second beam therewith whereby said second beam follows said first beam;

(d) an unstable resonator positioned in a path along said third direction and disposed to transmit said beams therethrough, said beams comprising the output of said unstable resonator.

4,127,827

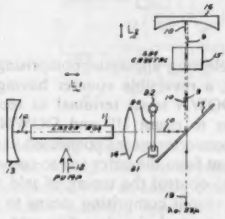
OPTIMIZED MODE-LOCKED, FREQUENCY DOUBLED LASER

James D. Barry, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 7, 1977, Ser. No. 785,486

Int. Cl.[2] H01S *3/10*

U.S. Cl. 331—94.5 C **2 Claims**



1. The improvement in the second harmonic power output of a folded cavity, frequency doubling, solid state laser having a first leg and a second leg coupled by a folding mirror, the said first leg having a solid state laser rod generating a laser beam of fundamental frequency along the axis of the laser rod, the improvement comprising:

a. a quarter wave plate at the said fundamental frequency having a central axis;

b. means for positioning the said quarter wave plate in the

said first leg such that the said axis of the quarter wave plate and the laser rod axis substantially coincide; and

c. means for rotating the said quarter wave plate about the said laser rod axis for maximizing the said second harmonic output.

4,127,828

OPTICAL BEAM EXPANDER FOR DYE LASER

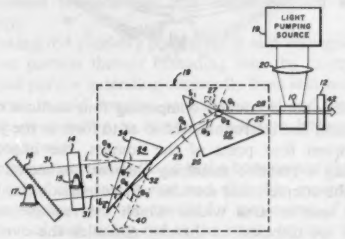
Gary K. Klauminzer, Palo Alto, Calif., assignor to Molectron Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 676,233, Apr. 12, 1976, Pat. No. 4,016,504. This application Mar. 25, 1977, Ser. No. 781,146

The portion of the term of this patent subsequent to Apr. 5, 1994, has been disclaimed.

Int. Cl.[2] H01S *3/02*

U.S. Cl. 331—94.5 C **13 Claims**



1. In a dye laser apparatus including a pair of spaced apart reflectors defining an optical cavity having a dye cell and a beam expander disposed within said cavity, and a light pumping source for optically exciting the dye to a lasing condition, an improved beam expander comprising:

a first prism having a first input surface aligned with the optical axis of the dye cell and inclined to have an incidence angle of θ_1 relative thereto for receiving a light beam generated by said dye cell and a first output surface intersecting said first input surface at a first apex angle δ_1, the incident beam being refracted by said first prism and the refracted beam emerging from said first output surface with an exit angle of θ_4; and

a second prism having a second input surface disposed opposite said first output surface and oriented relative thereto such that said refracted beam is incident thereupon with a second incidence angle θ_5, and having a second output surface intersecting said second input surface at a second apex angle δ_2 whereby said refracted beam is further refracted and emerges from said second output surface with a second exit angle θ_8, the width of said further refracted beam being expanded relative to the beam incident on the first input surface in the plane of refraction by a factor of $M_1 \times M_2$ where

$$M_1 = \left[\frac{\left(1 - \frac{\sin^2\theta_1}{n_1^2}\right)\left(1 - \sin^2\theta_4\right)}{\left(1 - \sin^2\theta_1\right)\left(1 - \frac{\sin^2\theta_4}{n_1^2}\right)} \right]^{\frac{1}{2}}$$

$$M_2 = \left[\frac{\left(1 - \frac{\sin^2\theta_5}{n_2^2}\right)\left(1 - \sin^2\theta_8\right)}{\left(1 - \sin^2\theta_5\right)\left(1 - \frac{\sin^2\theta_8}{n_2^2}\right)} \right]^{\frac{1}{2}}$$

4,127,829

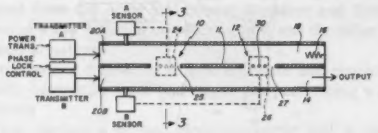
FAIL-SAFE POWER COMBINING AND SWITCHING NETWORK

Ralph Levy, Newton, and Paul T. K. Young, Westwood, both of Mass., assignors to Microwave Development Labs. Inc., Needham Heights, Mass.

Filed Mar. 28, 1977, Ser. No. 781,684

Int. Cl.[2] H01P *1/10, 5/04;* H03H *7/48*

U.S. Cl. 333—2 **4 Claims**



1. A power combining and switching network for coupling to a pair of transmitters, comprising;

first and second series cascaded directional couplers, said first coupler having a pair of inputs coupling respectively to the pair of transmitters and a pair of outputs, and said second coupler having a pair of inputs coupling respectively to the pair of outputs of the first coupler and an output,

said first coupler having a first switching means defining a coupling state and a decoupling state of the first coupler,

said second coupler having a second switching means defining a coupling state and a decoupling state of the second coupler,

means for controlling the state of said first switching means including means for determining the operability of one of said transmitters to operate said first coupler to its coupling state when said one transmitter is operative and to operate said first coupler to its decoupling state when said one transmitter is inoperative,

and means for controlling the state of said second switching means including means for determining the operability of said other transmitter to operate said second switching means to its decoupling state when said other transmitter is operative and to operate said second switching means to its coupling state when said other transmitter is inoperative.

4,127,830

MICROSTRIP SWITCH WHEREIN DIODES ARE FORMED IN SINGLE SEMICONDUCTOR BODY

Henri R. Chalifour, Methuen, Mass.; Thomas A. Rose, Nashua, N.H., and Mark B. Goldman, Sudbury, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 26, 1977, Ser. No. 800,992

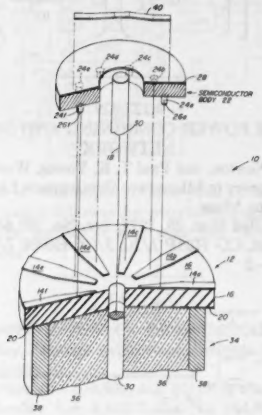
Int. Cl.[2] H01P *1/15*

U.S. Cl. 333—7 D **5 Claims**

1. A microwave device, comprising:

a. a microstrip circuit including a plurality of strip conductors disposed on a planar surface of a dielectric substrate, such strip conductors extending radially from an axis perpendicular to the plane of the substrate, such circuit being toroidal and symmetrically disposed about such axis;

b. a toroidal semiconductor body having a plurality of mesa shaped diodes and first electrodes formed on top regions of corresponding ones of the diodes, such semiconductor body being disposed symmetrically about the axis, each one of the first electrodes being directly bonded to a corresponding one of the strip conductors; and



c. a feed line disposed coaxially with the axis and passing through center regions of the microstrip circuit and the semiconductor body, such feed line being electrically connected to a second electrode of the diodes.

4,127,831

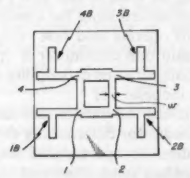
BRANCH LINE DIRECTIONAL COUPLER HAVING AN IMPEDANCE MATCHING NETWORK CONNECTED TO A PORT

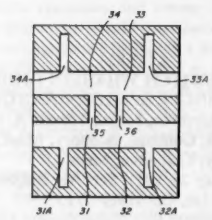
Gordon P. Riblet, 27 Roberts Rd., Wellesley, Mass. 02181

Filed Feb. 7, 1977, Ser. No. 766,431

Int. Cl.[2] H01P *5/18*

U.S. Cl. 333—10 **26 Claims**





1. A symmetrical two branch coupler comprised of four sections of signal transmission line interconnected so as to form at the junction therebetween four ports of the coupler with oppositely disposed lines having like characteristic admittances, the improvement comprising at least two two-port matching networks connected respectively at two of the four ports of the coupler with each matching network connected at its associated port and independent of connection to the other ports, each matching network comprising at least a portion of transmission line and a stub means connected to said portion of transmission line at a point remote from the coupler port, said matching network capable of matching both resistive and reactive impedance components.

4,127,832

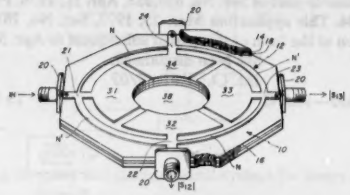
DIRECTIONAL COUPLER

Gordon P. Riblet, 11 Michigan Dr., Natick, Mass. 01760

Continuation-in-part of Ser. No. 766,431, Feb. 7, 1977. This application Mar. 28, 1977, Ser. No. 781,683

Int. Cl.[2] H01P *5/18*

U.S. Cl. 333—10 **15 Claims**



1. A directional coupler comprising four sections of signal transmission line interconnected so as to form at the junctions therebetween four ports of the coupler, the improvement comprising a reactive matching element connected to each port of the coupler, said sections of transmission line defining an open interior area within which the reactive matching elements are disposed to thereby minimize the overall area covered by the coupler.

4,127,833

BAND PASS FILTER

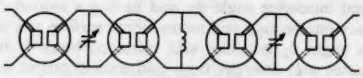
Jan A. Bezemer, Zwijndrecht, and Herman R. C. Tromp, Bleiswijk, both of Netherlands, assignors to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

Filed Jan. 31, 1977, Ser. No. 764,400

Claims priority, application Netherlands, Feb. 4, 1976, 7601124

Int. Cl.[2] H03H *9/04, 9/26, 9/32*

U.S. Cl. 333—72 **6 Claims**



A FILTER CHAIN

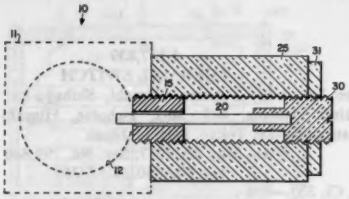
1. Filter chain for passing a band of frequencies, comprising a number of filter units, each of which units are: made of a high-quality piezoelectric material, vibrate according to the thickness shear mode, coupled electrically one to another, and contain two mainly acoustically coupled resonators; the filter chain comprising at least one filter set having two electrically coupled filter units, wherein each unit has at least one resonant frequency which is the same as one of the resonant frequencies in each of the units; and said filter units being convex at least on one side, whereby the acoustic coupling coefficient within one filter set is very high with respect to its electric coupling coefficient.

4,127,834

TEMPERATURE COMPENSATING APPARATUS FOR MICROWAVE OSCILLATORS AND THE LIKE

Martin S. Stringfellow, Tempe, and Michael K. Waldo, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 29, 1977, Ser. No. 828,715
Int. Cl.[2] H01P 1/30, 7/06
U.S. Cl. 333—83 T 10 Claims



1. In microwave oscillators and the like employing a housing with a microwave cavity therein, apparatus for temperature compensating the frequency drift comprising:

(a) a tubular waveguide section mounted in the housing so as to extend therethrough into communication with the cavity;

(b) a tuning rod slideably positioned in said waveguide with a first portion thereof extending into the cavity and a second portion extending outwardly from said waveguide exterior to said housing, said tuning rod and said waveguide cooperating to minimize radiation leakage therethrough; and

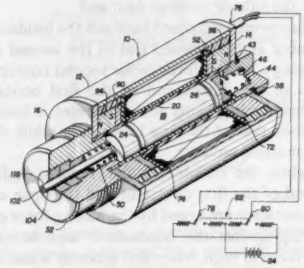
(c) compensator means affixed to the housing and the second portion of said tuning rod and slideably mounting said tuning rod in said waveguide for movement of the first portion of said tuning rod in the cavity to alter the resonant frequency of the cavity in accordance with temperature changes of said compensator means, the alterations in resonant frequency compensating for changes in the resonant frequency covered by temperature changes of the housing.

4,127,835

ELECTROMECHANICAL FORCE MOTOR

Dale A. Knutson, Oconomowoc, Wis., assignor to Dynex/Rivett Inc., Pewaukee, Wis.

Filed Jul. 6, 1977, Ser. No. 813,396
Int. Cl.[2] H01F 7/16; H02K 33/16
U.S. Cl. 335—266 15 Claims



1. An electromechanical force motor comprising:

an elongate magnetic casing;

a magnetic armature coaxially mounted for axial reciprocation within said elongate casing;

an annular electromagnetic coil coaxially mounted within said casing;

means connected to said electromagnetic coil for electrically exciting said coil;

a first annular permanent magnet means coaxially mounted within said casing and axially positioned at one end of said electromagnetic coil;

a first annular pole washer coaxially mounted within said casing between said electromagnetic coil and said first annular permanent magnet and being magnetically isolated from said elongate casing;

a second annular permanent magnet means coaxially mounted within said casing and axially positioned at the other end of said electromagnetic coil;

a second annular pole washer coaxially mounted within said casing between said electromagnetic coil and said second annular permanent magnet and being magnetically isolated from said elongate casing;

a first magnetic pole means extending contiguous to but axially spaced from one end of said armature and thereby forming a gap between said first pole and the one end of said armature;

a second magnetic pole means extending contiguous to but spaced from the other end of said armature and thereby forming a gap between said second pole and the other end of said armature;

push rod means connected to said armature and projecting axially outwardly from said casing for performing work, wherein

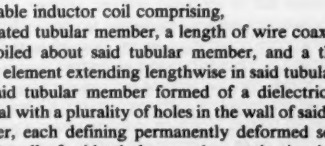
electrical excitation of said electromagnetic coil in either direction will produce a magnetic flux through said armature which will act in concert with the permanent magnetic flux across the gap between one of said first and second magnetic pole means and an associated end of said armature and concomitantly said electrical excitation of said coil will produce a magnetic flux through said armature which will act in opposition to the permanent magnetic flux across the gap between the other of said first and second magnetic pole means and an associated end of said armature to induce movement of said armature and said pushrod means in the direction of cooperative permanent magnetic and electromagnetic flux to a degree proportional with the current passing through said coil.

4,127,836

TUNABLE INDUCTOR COIL

Stephen Slenker, Chelmsford, Mass., assignor to Piconics, Incorporated, Tyngsboro, Mass.

Filed Dec. 27, 1977, Ser. No. 864,684
Int. Cl.[2] H01F 21/06
U.S. Cl. 336—136 5 Claims



1. A tunable inductor coil comprising,

an elongated tubular member, a length of wire coaxial with and coiled about said tubular member, and a threaded tuning element extending lengthwise in said tubular member, said tubular member formed of a dielectric plastic material with a plurality of holes in the wall of said tubular member, each defining permanently deformed segments of said wall of said tubular member projecting inwardly thereof a distance sufficient to engage the threads of said threaded tuning element thereby providing thread engaging means.

4,127,837

INDICATING DEVICE FOR FUSE-LINKS MORE PARTICULARLY MINIATURE FUSE-LINKS

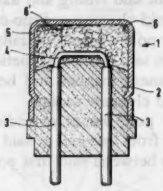
Hans Borchart, Witten-Bommern, Germany, assignor to Wickmann Werke Aktiengesellschaft, Germany

Filed Jan. 31, 1977, Ser. No. 764,521

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1976, 2603708

Int. Cl.² H01H *85/30*

U.S. Cl. 337—265 **5 Claims**



1. In an electric fuse of the type having a casing closed by a base member with a meltable fuse-link housed within the casing: an indicating device for providing a visible indication of the state of the fuse comprising means defining a transparent portion of said casing through which can be seen the upper surface of said base member; and a substance disposed within said casing in the region between the casing transparent portion and base member upper surface and being heat-sensitive to temperatures at and above those at which the fuse-link melts for undergoing a reaction in which said substance is consumed by the heat generated within said casing during melting of said fuse-link, said substance having a color which contrasts with that of said base member upper surface so that upon melting of said fuse-link and consumption of said substance, the contrastingly colored upper surface becomes visibly exposed through said casing transparent portion thereby indicating a change of state of the fuse.

4,127,838

FITTING OF A HEAT-SENSITIVE CAPSULE IN A WALL OF A WATER CHAMBER OR THE LIKE

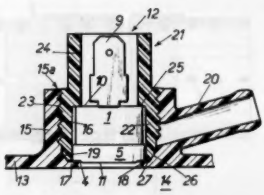
René E. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Nov. 8, 1976, Ser. No. 739,824

Claims priority, application France, Nov. 10, 1975, 75 34298

Int. Cl.² H01H *37/04*

U.S. Cl. 337—380 **10 Claims**



1. System comprising an enclosure having a wall; fluid contained in the enclosure; a seat formed in said wall and having a bottom; and opening in said bottom, which communicates with the interior of said enclosure; orifice means open to the atmosphere which includes a port in the seat, extending laterally to the seat, said seat having an inner surface forming an annular zone between said opening and said port; a capsule comprising a casing, a heat-sensitive element in the casing, and a metal part forming one end of said casing and engaging said heat-sensitive element; and releasable means for inserting and holding the capsule inside the seat with said metal part engaging said annular zone to releasably seal said opening.

4,127,839

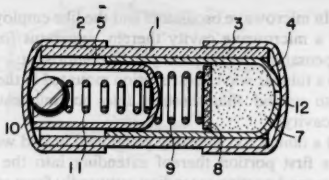
THERMAL SWITCH

Hideo Ito, 1-12, 2-chome, Higashi, Shibuya-ku, Tokyo, and Shinji Hashiba, 407, 36-2, 1-chome, Higashi-Kanamachi, Katsushika-ku, Tokyo, both of Japan

Filed May 23, 1977, Ser. No. 799,840

Int. Cl.² H01H *37/76*

U.S. Cl. 337—408 **8 Claims**



1. A thermal switch comprising:

an insulating cylindrical member;

conductive caps attached to both ends of the insulating cylindrical member; a first cup-shaped contactor having its cylindrical body closed at one end and disposed in the insulating cylindrical member, with its closed end held in contact with one of the conductive caps;

a second cup-shaped contactor having its cylindrical body closed at one end and disposed in the first contactor, with its open end held in contact with the other conductive cap and the outer peripheral surface of its cylindrical body in sliding contact with the inner peripheral surface of the cylindrical body of the first contactor;

a fusible powder of an insulating material packed in the first contactor at the side of its closed end and fused at a predetermined temperature;

a cover for closing the fusible powder packing portion;

a first bias spring interposed between the cover and the second contactor for urging the open end of the second contactor against the other conductive cap;

an insulating spherical member disposed in the second contactor at the side of its open end; and

a second bias spring interposed between the insulating spherical member and the closed end of the second contactor for applying a biasing force to the second contactor in the direction of the closed end of the first contactor, the second bias spring being set to present a biasing force smaller than that of the first bias spring while the fusible powder remains unfused;

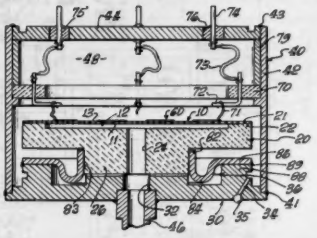
wherein when the fusible powder remains unfused, the closed end of the first contactor and the open end of the second contactor are urged by the biasing force of the first bias spring against the conductive caps to electrically connect them to each other, and wherein when the fusible powder is fused and the compression stress applied to the first bias spring to reduce its biasing force smaller than that of the second bias spring, the second contactor is moved by the biasing force of the second bias spring into the first contactor to cut off the electrical connection between the second contactor and the conductive caps, thereby to electrically disconnect the conductive caps from each other.

4,127,840

SOLID STATE FORCE TRANSDUCER

J. Hardy House, Yorba Linda, Calif., assignor to Conrac Corporation, Stamford, Conn.

Filed Feb. 22, 1977, Ser. No. 770,596
Int. Cl.[2] G01L 1/22
U.S. Cl. 338—4 12 Claims



1. Force transducer comprising a single crystal of aluminum oxide having a crystal face with such crystal symmetry that semiconductive silicon having piezoresistive properties can be grown epitaxially on said face,

means for supporting said crystal for deformation of said face in response to a force to be measured,

and a piezoresistive silicon strain gage comprising a four-arm piezoresistive bridge in monocrystalline form molecularly integrated directly with said single crystal face,

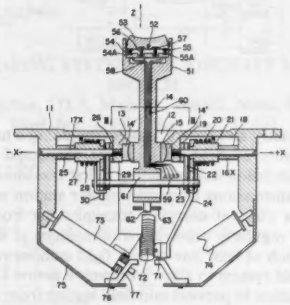
the crystal axes of said bridge arms being so oriented with respect to said crystal deformation that all four arms of the bridge contribute additively to the bridge output.

4,127,841

MULTI-DIRECTION CONTROLLING MECHANISM

Yasuo Kato, Yokohama; Motoo Kakiuchi, Tokyo; Takashi Arai, Mishima, and Kunio Okawa, Shizuoka, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1977, Ser. No. 819,817
Claims priority, application Japan, Jul. 30, 1976, 51-90990
Int. Cl.[2] H01C 10/16
U.S. Cl. 338—128 5 Claims



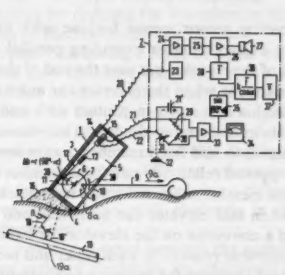
1. A multi-direction controlling mechanism comprising a controlling lever supported by a spherical bearing at an intermediate point to be tiltable in any direction and provided with a lateral slot and a shaft portion on one side of said spherical bearing, a first pair of shafts supported by a stationary casing of the mechanism to coaxially extend along a line passing through the center of rotation of said controlling lever, a pair of link members rotatably mounted on said first pair of shafts respectively, a second shaft extending through said slot in parallel with said first pair of shafts, a first pair of arms rotatably mounted on said first pair of shafts respectively, a first pair of torsion springs respectively wound about said first pair of shafts for urging said first pair of arms against said second shaft, a second pair of shafts supported by said casing and extending in a direction normal to said first pair of shafts, a third pair of shafts extending from the opposite sides of a guide member in parallel with said second pair of shafts, said guide member being provided with a slot for receiving said shaft portion of said controlling lever, a second pair of arms rotatably mounted on said second pair of shafts, a second pair of torsion springs respectively wound about said second pair of shafts for urging said second pair of arms against said third pair of shafts respectively in the opposite direction, and a plurality of electric signal generating means operated by one ends of said first and second pairs of arms for generating electrical signals in response to the rotation of said arms, whereby when said controlling lever is tilted in any direction by any inclination angle, said signal producing means produce electric signals corresponding to the direction and angle of inclination of said controlling lever.

4,127,842

APPARATUS FOR THE MEASUREMENT OF FLOWING MEDIA ACCORDING TO THE ULTRASONIC DOPPLER METHOD

Dieter Hassler, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 17, 1976, Ser. No. 742,666
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1975, 2555134
Int. Cl.[2] G01S 9/66; A61B 10/00
U.S. Cl. 340—3 D 14 Claims



1. In apparatus for measuring the flow of flowing media according to the ultrasonic Doppler effect method, including an applicator having ultrasonic vibrator means for the reception of ultrasonic energy substantially along an applicator axis after impingement on a flowing medium having a given flow axis, and Doppler processing means coupled with said ultrasonic vibrator means for processing signals in accordance with the ultrasonic energy as received by the applicator and in accordance with the angle of the applicator axis relative to the flow axis of a flowing medium to provide a Doppler flow measurement of a flowing medium independently of the angle formed between the applicator axis and the flow axis of such flowing medium, said processing means including a mechanical angular position sensor for sensing the angle of the applicator axis and comprising mechanical means for actuation in accordance with varying angular positions of the applicator, and mechanical/electrical transducer means responsive to actuation of the mechanical means to provide electrical angle responsive signals corresponding to the angular positions of said applicator, said mechanical angular position sensor comprising a mechanical tilt/rotary converter with said mechanical means comprising a rotary member rotatably carried by said applicator, and engaging means for mounting at an application location and engaging the rotary member so as to maintain the rotary member in a fixed angular orientation relative to the flow axis during tilting movement of the applicator, the appli-

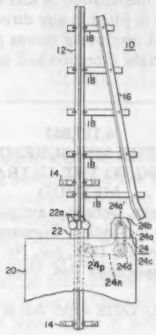
cator axis thereby rotating relative to the axis of the rotary member as the applicator is tilted.

4,127,843

POSITION SENSOR DEVICE FOR ELEVATOR CAR

Nobuo Anzai, and Tsuyoshi Satoh, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,641
Claims priority, application Japan, Mar. 12, 1976, 51/26819
Int. Cl.[2] G08B *3/02*
U.S. Cl. 340—21 **12 Claims**



1. A position sensor means for use with an elevator car comprising a fixed member extending parallel to the path of movement of the elevator car near the end of the path of travel of the elevator car when the elevator car nears said end of the path of travel, a first roller in contact with said fixed member and movable in response to the lateral movement of the elevator car relative to said fixed member, a cam member mounted in spaced opposed relation to said fixed member and at an angle to said fixed member, a second roller in contact with said cam member when said elevator car nears said end of the path of travel, and a converter on the elevator car having at least two elements movable relative to each other and means connected to one of said elements for producing an output in response to the movement of one of said elements and connected in response to the relative movement of said two elements, said second roller being connected to said one element for moving said one element in response to lateral movement of said second roller as the elevator car moves along said cam member, and said first roller being connected to said one of said elements for relatively moving said element in response to lateral movement of the elevator car relative to said fixed member.

4,127,844

VEHICLE STROBE WARNING LIGHT SYSTEM

Francis W. Purdy, 12000 Fairhill, Apt. 414, Cleveland, Ohio 44120

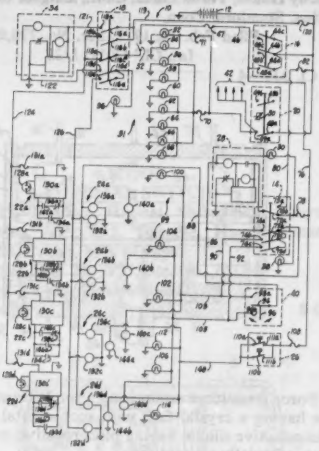
Filed Mar. 23, 1977, Ser. No. 780,356
Int. Cl.[2] B60Q *1/00, 1/44*
U.S. Cl. 340—71 **19 Claims**

1. In a vehicle having a conventional headlight assembly, taillight assembly, and brake assembly, a method of warning a following driver, comprising the steps of:

(a) disposing an auxiliary flash lamp at the rear of the vehicle, the flash lamp capable of producing a high-intensity light of short duration;

(b) discharging the flash lamp in response to actuation of the brake assembly at the initiation of a braking operation; and

(c) discharging the lamp again only after a predetermined period of time has passed and in response to actuation of



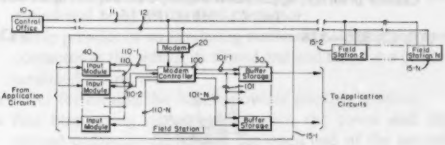
the brake assembly upon the initiation of another braking operation.

4,127,845

COMMUNICATIONS SYSTEM

David J. Dansbach, Henrietta, and James E. Snyder, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 516,849, Jan. 10, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 723,104
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—151 **17 Claims**



1. A telemetry and control system including a master station and a plurality of field stations interconnected by a single duplex transmission link including a first transmission channel carrying transmissions from said master station and a second transmission channel carrying transmissions from said field stations for regularly receiving transmissions at said field stations in which at least one of said field stations responds to a failure in said system to allow preventive action to be taken at said field station to prevent said field station from tying up said second transmission channel, comprising,

a receiver at said field station responsive to transmissions on said first transmission channel,

a transmitter at said field station for transmitting indications on said second transmission channel when enabled by said receiver,

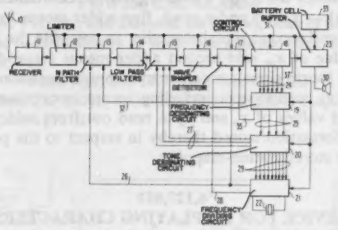
timing means, at said field station reset in response to each enablement of said transmitter by said receiver, said timing means becoming set in the absence of enablement of said transmitter for a predetermined timing period, and

alarm means, at said field station, controlled by said timing means when set for indicating a failure of said system.

4,127,846
TONE SIGNAL DETECTING CIRCUIT

Toshihiro Mori; Takashi Oda, and Koichi Nagata, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1977, Ser. No. 854,967
Claims priority, application Japan, Nov. 26, 1976, 51-141859; Nov. 26, 1976, 51-141861
Int. Cl.² H04Q 1/45
U.S. Cl. 340—171 PF 6 Claims



1. A tuneable tone signal detecting circuit for sequentially receiving and passing a plurality of tone signals in a predetermined sequence comprising:

a first means responsive to a first control signal for selecting and providing as an output one of a plurality of clock signals of a frequency equal to N, N being an integer equal to or greater than 2, times the frequency of said plurality of tone signals;

an N-path filter having a prescribed energy buildup and decay rate for selecting and responding to said plurality of tone signals in accordance with the output of said first means;

a first filter having prescribed frequency characteristics for removing harmonic signals of each of said plurality of tone signals contained in the output of said N-path filter;

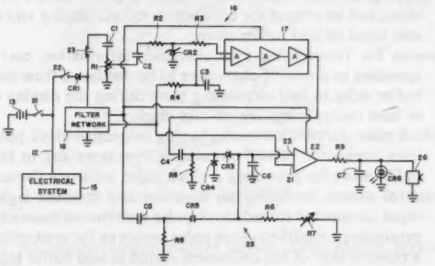
a second means connected to said first filter for changing said frequency characteristics in response to a second control signal, a detector connected to said first filter and responsive to each of said plurality of tone signals sequentially passing said N-path filter for providing a detected output; and

a third means connected to said detector and responsive to said detecting signals for providing said first and second control signals.

4,127,847
MONITORING SYSTEM FOR AIRCRAFT MASTER SWITCH

Francis J. Stifter, 171 S. Main St., Natick, Mass. 01760

Filed Jan. 7, 1977, Ser. No. 757,614
Int. Cl.² G08B 21/00
U.S. Cl. 340—530 9 Claims



1. Electrical apparatus for use on aircraft and comprising:

a supply bus for electrical equipment on the aircraft;

a d.c. power supply;

manual switch means for connecting said supply bus and said d.c. power supply;

monitor means connected to said supply bus and adapted to produce an output in response to energization thereof by said d.c. power supply;

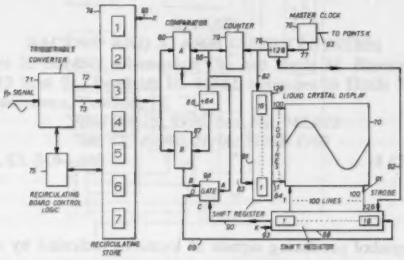
alarm means energized by said output from said monitor means; and

sensing means for preventing said output in response to the presence of electrical pulses on said bus.

4,127,848
LIQUID CRYSTAL WAVEFORM DISPLAYS

Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Nov. 1, 1976, Ser. No. 737,794
Claims priority, application United Kingdom, Nov. 5, 1975, 45957/75
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 M 9 Claims



1. An electronic waveform display comprising:

i. sampling means for dividing the waveform to be displayed into a series of discrete amplitude samples;

ii. a liquid crystal cell having a layer of liquid crystal material between two dielectric substrates, a first series of *n* strip electrodes on one substrate and a second series of *m* strip electrodes on the other substrate arranged to define an nxm plurality of elements across which electric signals may be applied to cause an observable display effect;

iii. means for producing *m* different reference electrical signals and for simultaneously applying a different one of said reference signals to each electrode in the second series of electrodes;

iv. converter means connected between the sampling means and the first series of electrodes for selectively producing ones of the *m* different reference signals, relative to the order of reference signals applied to the second series of electrodes, the produced signals representing the value of each amplitude samples and for selectively applying such selectively produced signals concurrently to a plurality of the first series of electrodes;

v. whereby an rms voltage greater than a display effect threshold voltage is maintained across some non-selected liquid crystal elements of the cell so that these elements are in an "on" state and a substantially zero rms voltage exists simultaneously across selected elements which are defined by one electrode of said first series of electrodes and by one electrode of said second series of electrodes to which the same signals are applied so that these elements are in their "off" state and collectively display the waveform.

4,127,849
SYSTEM FOR CONVERTING CODED DATA INTO DISPLAY DATA

Joseph K. Okor, 516 Green St., Cambridge, Mass. 02139

Continuation-in-part of Ser. No. 627,960, Nov. 3, 1975, abandoned. This application Jan. 11, 1977, Ser. No. 758,415
Int. Cl.² G06K 15/20
U.S. Cl. 340—324 AD 3 Claims

1. A system for converting coded data signals for presentation as display symbols on a display device comprising

(a) an input computer adapted to store three-dimensional data with respect to a symbol to be displayed and generate

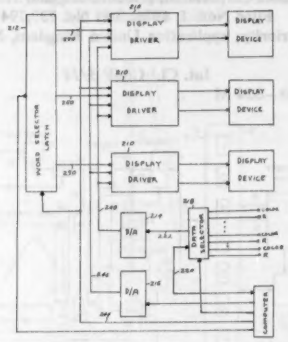
signals corresponding to a two-dimensional display representation of said symbol,

(b) symbol defining means connected to and providing input data to said input computer,

(c) a display computer connected to and receiving the output of said input computer,

(d) at least one dot generator connected to said display computer and controlled thereby, said dot generator adapted to generate a dot producing signal at the beginning of the horizontal position of each symbol,

(e) at least one symbol generator connected to said generator and to said display computer and adapted to generate



symbol producing signals at locations indicated by said dot generator, and,

(f) a video combiner connected to said symbol generator and to said display computer for processing said symbol producing signals and delivering them to a selected display device,

(g) said dot generator including x and y comparators and x and y stacks operatively connected to one another and to said display computer, said x and y comparators receiving, respectively, x and y counts corresponding to the x and y addresses of said symbols.

4,127,850

SCANNING DISPLAY APPARATUS

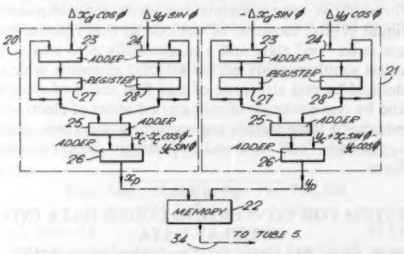
David J. Vallins, Cheltenham, England, assignor to Smiths Industries Limited, London, England

Continuation-in-part of Ser. No. 618,662, Oct. 1, 1975. This application Feb. 14, 1977, Ser. No. 768,663

Claims priority, application United Kingdom, Sep. 3, 1976, 36668/76

Int. Cl.[2] G06F 3/14

U.S. Cl. 340—324 A **14 Claims**



1. In a display system in which a display image is provided in a display area of a display device in accordance with modulation of signals that are synchronized to point-by-point scanning of the said display area, the modulated signals being derived in accordance with stored information which is read out from memory means and which relates to the mapping of the image within the display area, and in which the disposition of the image within the display area is varied from a datum defined by the stored information in dependence upon an input variable angle ϕ, said system including means to perform a transformation process dependent upon the said input angle ϕ to identify in respect of each successive point (x_d, y_d) of said scan the corresponding point (x_p, y_p) in the stored datum-mapping, the improvement wherein said transformation means comprises means to derive distinct first and second signals in accordance respectively with $x_d\cos\phi$ and $y_d\sin\phi$, means to derive distinct third and fourth signals in accordance respectively with $-x_d\sin\phi$ and $y_d\cos\phi$, first adder means for adding said first and second signals together to compute the instantaneous value of x_p, said second adder means for adding said third and fourth signals together to compute the instantaneous value of y_p, said system including means responsive to said computed values of x_p and y_p to read out from said memory means information stored thereby in respect to the point (x_p y_p) of the stored datum-mapping.

4,127,851

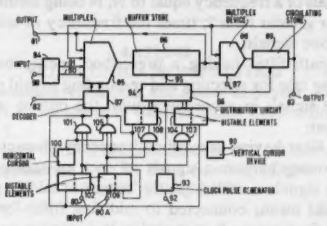
DEVICE FOR DISPLAYING CHARACTERS

Andreas P. Middel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 609,450, Sep. 2, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,610

Int. Cl.[2] G06K 15/20

U.S. Cl. 340—324 AD **4 Claims**



1. A device for displaying a plurality of rows of characters and spacing lines on a display comprising:

input means for supplying character information to be displayed;

a buffer store having an input connected to said input means for storing character information corresponding to a plurality of rows of characters to be displayed and an output connected to said input of said buffer store, said buffer store having a capacity for accommodating all characters to be displayed together;

a circulating row store for storing character information corresponding to a row of characters to be displayed, said row store circulating synchronously with the scanning of a line of a row of characters to be displayed, said row store having an input connected to said output of said buffer store; and an output for connection to said display and to said input of said buffer store;

means for transferring said character information corresponding to a row of characters to be displayed from said buffer store to said circulating store during the display of at least one spacing line on said display;

clock pulse distribution means having respective clock pulse lines connected to said circulating row store and to said buffer store for providing a clock pulse sequence thereto;

control means, including an insertion and deletion signal input, connected to said clock pulse distribution means for producing a modified clock pulse sequence for controlling a relative shift of the characters stored in said buffer store with respect to characters stored in said circulating row store by at least one character position so as to produce a relative shift in the output of said circulating row store for allowing the insertion or deletion of a character in said buffer store; and

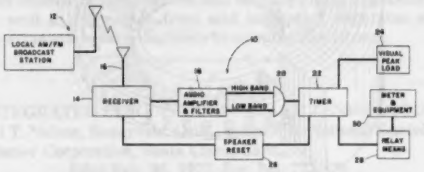
x y cursor means connected to said control means for selectively activating said input of said buffer store for allowing passage of a predetermined row portion to said buffer store, shifted at least one character position with respect to said character information in said buffer store under the control of said modified clock pulse sequence for said circulating store.

4,127,852

POWER USE ALARM

Marvin W. Preston, and Daymon G. Barton, both of El Dorado Springs, Mo., assignors to R. & I.C. Alarms, Inc., El Dorado Springs, Mo.

Filed Apr. 28, 1977, Ser. No. 791,710
Int. Cl.[2] H04B *7/00*; H04Q *9/12*; H04J *3/00*
U.S. Cl. 340—171 R **14 Claims**



13. A peak load alarm system comprising:

(a) a radio receiver;

(b) a tone decoder operably connected to the radio receiver, said tone decoder comprising means for detecting and separating two separate tones of different frequency simultaneously and enabler means operably connected between said means for detecting such that output from the tone decoder is withheld until said separate tones are received simultaneously;

(c) a timer operably connected to the output of the tone decoder for initiaton by said tone decoder output, and;

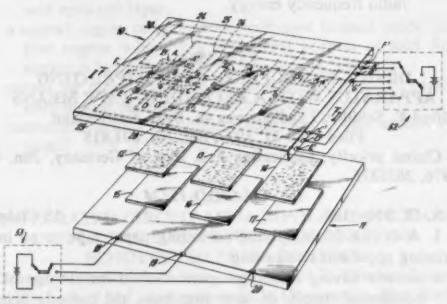
(d) audio and visual alarm means operably connected to the timer means providing audio and visual alarm while the timer is running.

4,127,853

ELECTROCHROMIC DISPLAY ADAPTED FOR MULTIPLEXING

Marshall Leibowitz, Englewood, N.J., assignor to Timex Corporation, Waterbury, Conn.

Filed Apr. 12, 1976, Ser. No. 676,030
Int. Cl.[2] G09F *9/32*
U.S. Cl. 340—336 **12 Claims**



1. An electrochromic display device comprising in layered form:

a first transparent substrate with at least a first and second indicia each being formed thereon by at least one selectively energizable electrode-segment and an electrochromic layer on each said electrode-segment;

a second substrate with at least a first and second isolated and selectively energizable counter-electrode, said first counter-electrode being associated with said first indicia and said second counter-electrode being associated with said second indicia;

a first separate layer of electrolyte material comprising a powdered cationic ion exchange resin in the hydrogen ion form between said first indicia and associated first counter-electrode; and

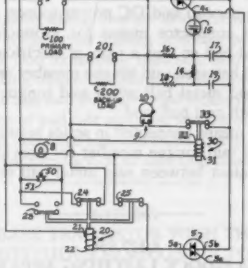
a second separate layer of electrolyte material comprising a powdered cationic ion exchange resin in the hydrogen ion form between said second indicia and associated second counter-electrode.

4,127,854

BACK-UP AND ALARM CIRCUIT SYSTEM

Mark R. Gardner, Champaign, Ill., and Hazle M. Rasmussen, 113 East St., Penfield, Ill. 61862, assignors to Hazle Mary Rasmussen, Penfield, Ill.

Filed Dec. 9, 1976, Ser. No. 748,872
Int. Cl.[2] G08B *21/00*; H05B *1/02*
U.S. Cl. 340—640 **3 Claims**

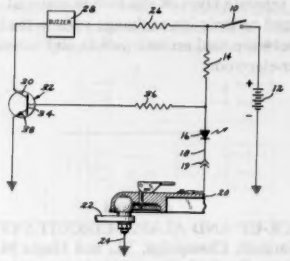


1. A safety back-up and alarm system circuit for electrical loads comprising means for connecting said circuit to a power source, circuit means for connecting a primary electrical load, circuit means for connecting a secondary back-up electrical load, switching circuit means responsive to the output from said primary load connection, which deliver power to said primary load connection when a load is inserted therein and is functioning and when said primary load is functioning fails to deliver power to said secondary back-up load connection and which, upon failure of said primary load, automatically delivers power to a secondary back-up load inserted in said secondary back-up load connection, said switching circuit means including current-sensing impedance means and at least one relay element connected to receive output from said impedance means, to, when energized, shunt current from said secondary load connection, and to, when de-energized, provide power to said secondary load connection, said impedance means being connected in series with said primary load connection and being adapted to control threshold current in said primary load circuit at a predetermined level and to distinguish between failure of said primary load and mere capacitance load in said primary load circuit and said impedance means being connected to, when conducting, energize said relay element and to, when non-conducting, de-energize said relay element and signal means responsive to an output signal from said switching circuit which signals failure of said primary load.

4,127,855
TRAILER HITCH MONITOR

Thomas J. Toner, 8225 Hiawatha Cir., Eden Prairie, Minn. 55344

Filed Oct. 7, 1976, Ser. No. 730,433
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—687 5 Claims



1. An electrical circuit attachment apparatus for monitoring a connection between a trailer and a conventional ball-type trailer hitch, said ball hitch having a single piece metal ball secured to a frame mounted on a motor vehicle, said trailer having a metal tongue member which is releasably connected to said ball, said electrical apparatus connected to a DC power source, comprising:

(a) electrical conductor means for connecting said metal tongue member to said DC power source;

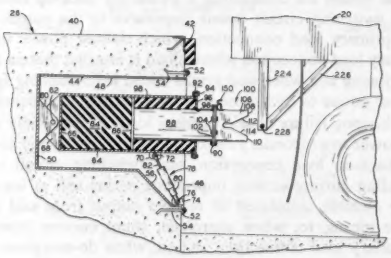
(b) electrical conductor means for grounding said single piece metal ball so that a path of electrical continuity is established between said tongue member and said ground through said metal ball when said tongue member is in contact with said ball; and

(c) indicator means connected in series between said power source and said tongue member for providing an indication of contact between said metal ball and said tongue member.

4,127,856
VEHICLE-DOCK LATCHING APPARATUS

Gary G. Bickel, 906 Paulding Rd., Fort Wayne, Ind. 46807

Filed Apr. 11, 1977, Ser. No. 786,070
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—687 10 Claims



1. Apparatus for latching a vehicle having a vehicle operator station to a dock comprising:

a latch member attached to one of said vehicle and dock;

latch means attached to the other of said vehicle and dock for receiving and automatically latching said member;

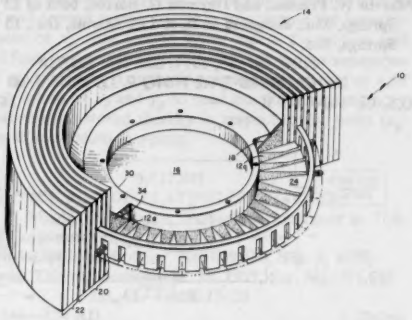
release means for releasing said member from said latch means; and

means for automatically registering said latch member with said latch means.

4,127,857
RADIO FREQUENCY ANTENNA WITH COMBINED LENS AND POLARIZER

Charles P. Capps, Goleta; George S. Hardie, Santa Barbara; Arthur C. Ludwig, Santa Barbara; Michael J. Maybell, Santa Barbara, and Gary A. Wideman, Goleta, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed May 31, 1977, Ser. No. 801,974
Int. Cl.[2] H01Q *19/06, 15/24*
U.S. Cl. 343—754 7 Claims



1. A multibeam antenna having a combined lens and polarizer, comprising:

(a) a plurality of feedports, each one being associated with a corresponding beam of radio frequency energy; and

(b) a radio frequency lens coupled to such plurality of feedports for providing collimation to each one of such beams, such lens comprising:

(i) a printed circuit parallel plate region having dielectric material, such region having disposed about a first portion of the periphery thereof the plurality of feedports;

(ii) a polarizer section including a plurality of polarizer sheets interleaved with a plurality of layers of dielectric material, having a dielectric constant substantially greater than one, such polarizer section being disposed about a second portion of the periphery of the parallel plate region; and

(iii) the dielectric material of the parallel plate region and the dielectric material of the polarizer section having related dielectric constants selected to enable the lens to form each beam as a substantially collimated beam of radio frequency energy.

4,127,858
DEVICE FOR SUPPLYING AN IMPRINTING APPARATUS WITH A RECORDING TAPE MEANS

Alfred E. Schiller, Landhausweg 4e, Baar, Switzerland

Filed May 31, 1977, Ser. No. 801,815
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625325
Int. Cl.[2] G01D *15/24*
U.S. Cl. 346—136 13 Claims

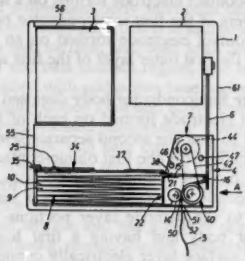
1. A device for supplying recording paper tape to an imprinting apparatus comprising

a cassette having a storage space therein for storage of a condensed supply of recording tape, the cassette being movable between an operating position and a refilling position;

a driving roll positioned on the imprinting apparatus adjacent the cassette; and

a non-driven pressure roll positioned at the front end of the cassette so as to contact the driving roll when the cassette is in its operating position to form a clamping gap between

the two rolls through which the recording tape is received;



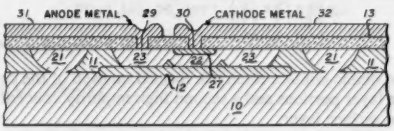
the cassette being insertable into said imprinting apparatus as well as retractable from said imprinting apparatus and arranged to be completely removable therefrom.

4,127,859

INTEGRATED CIRCUIT SUBSURFACE ZENER DIODE

Carl T. Nelson, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 25, 1977, Ser. No. 772,375
Int. Cl.[2] H01L *29/90*
U.S. Cl. 357—13 **6 Claims**



1. A zener diode fabricated in a semiconductor integrated circuit structure, said integrated circuit having a substrate of one conductivity type, an overlying epitaxial layer of the opposite conductivity type, isolation diffusion regions of said one conductivity type extending completely through said epitaxial layer and acting to isolate portions of said epitaxial layer, high conductivity buried layer regions of said opposite conductivity type located under selected areas of said epitaxial layer, base diffusion regions of said one conductivity type extending partly through said epitaxial layer, and emitter diffusion regions of said opposite conductivity type extending into said expitaxial layer to a lesser extent than said base diffusions, said zener diode comprising:

a first region of said isolation diffusion extending through said epitaxial layer;

a second region of said emitter diffusion located inside said first region whereby a peripheral portion of said first region is located outside of said second region;

means for making an ohmic connection to said first region only in said peripheral portion thereof; and

means for making an ohmic connection to said second region.

4,127,860

INTEGRATED CIRCUIT MESA BIPOLAR DEVICE ON INSULATING SUBSTRATE INCORPORATING SCHOTTKY BARRIER CONTACT

Howard R. Beelitz, Princeton, and Donald R. Preslar, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

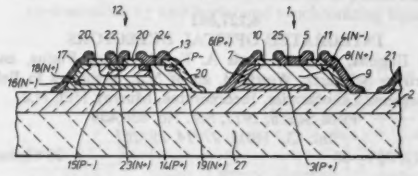
Filed Apr. 18, 1977, Ser. No. 788,329
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **9 Claims**

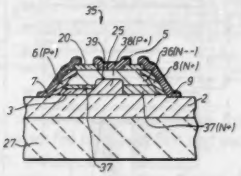
1. A semiconductor integrated circuit device comprising:

an insulating substrate having a surface,

a first mesa of semiconductor material on said surface, said semiconductor material being of one type conductivity, said first mesa having a surface relatively parallel to said surface of said substrate, and side sufaces, and

means including said mesa defining a vertical current flow type bipolar element, said means comprising a first region of conductivity type opposite to said one type in said mesa and defining a PN junction with the remaining material of said first mesa, first terminal means on one of said side





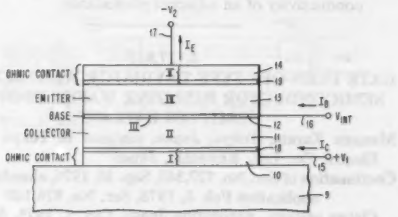
surfaces making ohmic contact to said remaining material, second terminal means making Schottky barrier rectifying contact to said remaining material, and third terminal means making ohmic contact with said first region, one of said second and said third terminal means being located on another one of said side surfaces, and the other one of said second and said third terminal means being located on said relatively parallel surface of said first mesa.

4,127,861

METAL BASE TRANSISTOR WITH THIN FILM AMORPHOUS SEMICONDUCTORS

Alain F. G. Deneuville, Vif - La Rivoire, Isere, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,874
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **15 Claims**



1. A thin film transistor including

a first semiconductor member having a monostable conductance characteristic and a first electrode electrically connected thereto by an ohmic contact material,

a transistor base comprising a thin film of a metal bonded to said first semiconductor member and connected to a second electrode,

an amorphous thin film layer composed of an amorphous

semiconductor material having a monostable conductance characteristic and bonded to said base,

a second ohmic contact material secured to said amorphous thin film layer,

an electrode connected to said amorphous thin film layer by means of said second ohmic contact material, and

said first member, said base and said amorphous layer forming a sandwich.

4,127,862

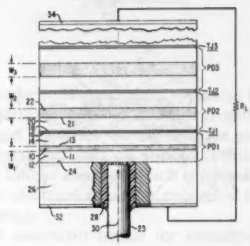
INTEGRATED OPTICAL DETECTORS

Marc Ilegems, Summit; Louis A. Koszi, Scotch Plains, and Bertram Schwartz, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 6, 1977, Ser. No. 830,438

Int. Cl.[2] H01L *27/14, 29/161*

U.S. Cl. 357—30 **25 Claims**



20. An integrated optical detector comprising a multilayered structure in which:

at least one layer forms an input surface onto which radiation to be detected is made incident essentially normal to said layers;

first groups of layers form a plurality of stacked, double heterostructure photodiodes, each of said photodiodes comprising: a pair of wide bandgap, opposite conductivity type, transparent layers; a narrower bandgap radiation-absorbing layer sandwiched between said transparent layers; and a p-n junction located at the interface with the wide bandgap layer which is proximate said input surface; and

second groups of layers form a plurality of tunnel junctions interleaved with said photodiodes, each of said tunnel junctions comprising: a pair of opposite conductivity type, degenerately doped layers, each degenerately doped layer being contiguous with a wide bandgap layer of the same conductivity of an adjacent photodiode.

4,127,863

GATE TURN-OFF TYPE THYRISTOR WITH SEPARATE SEMICONDUCTOR RESISTIVE WAFER PROVIDING EMITTER BALLAST

Mamoru Kurata, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 727,345, Sep. 28, 1976, abandoned. This application Feb. 8, 1978, Ser. No. 876,140

Claims priority, application Japan, Oct. 1, 1975, 50-117642; Oct. 20, 1975, 50-125415

Int. Cl.[2] H01L *29/74*

U.S. Cl. 357—38 **2 Claims**

1. A gate turn-off type thyristor comprising:

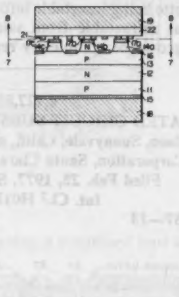
a first semiconductor body having four sequentially continuous layers, an adjacent two of which are of opposite conductivity types and form a PN junction therebetween and a first outer one of which constitutes a cathode layer divided into a plurality of mutually independent layer portions;

a first ohmic-contact electrode formed on each of the cathode layer portions;

a second ohmic-contact electrode formed on a second outer one of the layers of the first semiconductor body;

a third ohmic-contact electrode formed on an inner layer continuous to the first outer layer of the first semiconductor body;

a second separate semiconductor body disposed on the first ohmic-contact electrode formed on each of the cathode layer portions so that the second separate semiconductor body is detachable from the first ohmic-contact electrode formed on each of the cathode layer portions, the second separate semiconductor body acting as a series resistor with respect to the cathode layer portions of the first semiconductor body and having a first high impurity concentration surface layer electrically connected to the



first ohmic-contact electrode formed on each of the cathode layer portions and a second high impurity concentration surface layer;

a pair of first and second package electrodes, the first package electrode being contacted to the second high impurity concentration surface layer of the second separate semiconductor body, and the second package electrode being contacted to the second ohmi-contact electrode formed on the second outer layer of the first semiconductor body;

the first high impurity concentration surface layer of the second separate semiconductor body including a plurality of metal islands, the maximum width of which taken along a plane intersecting the thickness direction of the body at right angles thereto is smaller than a minimum one of the intervals between the cathode layer portions in order to avoid occurrence of a short circuit between two adjacent mutually independent cathode layer portions.

4,127,864

SEMICONDUCTOR DEVICE

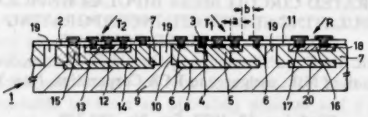
Pieter J. W. Jochems, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 697,274, Jun. 17, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,170

Claims priority, application Netherlands, Jun. 30, 1975, 7507733

Int. Cl.[2] H01L *27/02*

U.S. Cl. 357—44 **13 Claims**



1. A semiconductor device comprising a semiconductor body having a surface and comprising a substantially homogeneously doped semiconductor layer disposed at said surface, at least a bipolar transistor located in said body and comprising an

emitter zone of a first conductivity type adjoining said surface, a base zone of second conductivity type which adjoins said surface and within said body surrounds said emitter zone entirely, and a collector zone that is of said first conductivity type and adjoins said surface, said base zone comprising an active base region and base contact region, said base contact region being associated with said active base region and being deeper and more highly doped than said active base region, said emitter zone being located substantially completely within said active base region, said base contact region and said emitter zone being contacted at said surface for electrical connection, said collector zone comprising a surface-adjoining collector contact region of said first conductivity type which is contacted at said surface and has a higher doping concentration than the adjoining semiconductor material, said active base region, when viewed in a direction parallel to said surface, being present between said base contact region and said collector contact region, said doped semiconductor surface layer surrounding said collector contact region and said base regions, whereby said emitter zone, active base region, base contact region and collector contact region are provided in and have a different doping concentration than said doped semiconductor surface layer.

4,127,865

SYSTEM AND METHOD FOR DECODING TIME-DIVISION-MULTIPLEXED COLOR T.V. SIGNALS

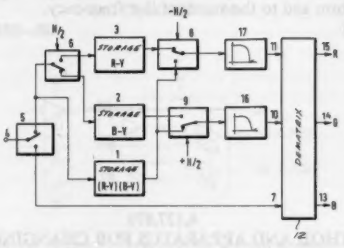
Dieter Poetsch, Ober Ramstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 29, 1977, Ser. No. 810,960

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629707

Int. Cl.[2] H04N 9/32

U.S. Cl. 358—12 **7 Claims**



1. In a system for decoding a transmitted color T.V. signal of the type comprising first and second color-information signals time-division-multiplexed in alternate horizontal line intervals, in combination, first, second and third storage means; and routing means operative for writing-in into the first storage means the multiplexed first and second signals in alternation, operative for writing-in into the second storage means only one of the two multiplexed signals, and operative for writing-in into the third storage means only the other of the two multiplexed signals.

4,127,866

REFERENCE SIGNAL GENERATOR

Noriyuki Yamashita, Ichikawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 30, 1977, Ser. No. 811,770

Claims priority, application Japan, Jul. 5, 1976, 51-79706

Int. Cl.[2] H04N 9/46

U.S. Cl. 358—19 **9 Claims**

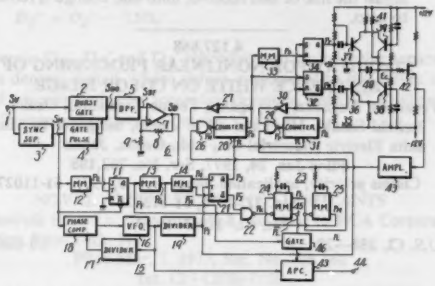
5. A reference signal generator for use with a color video signal processing circuit, said pulse generator generating a number of reference output pulses, a phase of which is phase-locked with an input color burst signal of a composite color video signal and a frequency of which is related with a burst frequency of said color burst signal, comprising:

a. an input terminal to which a composite color video signal having a color burst signal and horizontal and vertical synchronizing signals is supplied;

b. an output terminal;

c. a first oscillator for oscillating a number of pulses phase-locked with said color burst signal;

d. a second oscillator for feeding a number of pulses frequency-controlled by said horizontal synchronizing signals;



e. a first and a second counting means for counting said number of pulses fed from said first and second oscillators, respectively; and

f. an error detector for detecting a time difference error between two time points which the count of said each counting means reaches the predetermined number respectively, and for controlling the oscillating frequency of said first oscillator due to the error signal thereof by which said output pulses at said output terminal are phase locked with said color burst signal and are coincident in frequency with said number of pulses fed from said second oscillator.

4,127,867

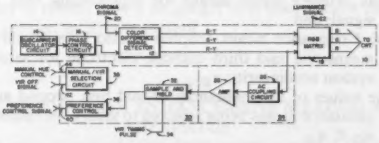
VIR HUE CONTROL SYSTEM

Seung K. Kim, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Jun. 6, 1977, Ser. No. 804,175

Int. Cl.[2] H04N 9/535

U.S. Cl. 358—28 **9 Claims**



1. In a color television receiver an automatic hue control circuit responsive to a periodically occurring VIR signal included in the received video, wave, said VIR signal containing a chroma reference portion of such phase that one color difference signal as detected is at a null and another portion of no chroma content adjacent said chroma reference portion, said automatic hue control circuit comprising:

chroma processing means responsive to said video wave to provide a null output during said no chroma content portion and a chroma reference output during said chroma reference portion,

AC control loop means responsive only to any change between the chroma reference output and the null output of said chroma processing means to provide a hue control signal,

said AC control loop means including timing means responsive to a single timing pulse occurring during the presence of said VIR signal and including at least a portion of said chroma reference portion, said timing means enabling said AC control loop means to provide said hue control signal during the period of said timing pulse, and

hue control means responsive to said hue control signal to adjust the hue of said receiver until said change is reduced to zero.

4,127,868

CIRCUITRY FOR NONLINEAR PROCESSING OF REFERENCE WHITE ON COLOR IMAGE

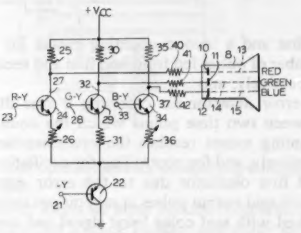
Yoshitomi Nagaoka, Neyagawa; Tetsuo Tomimoto, Osaka, and Reiichi Sasaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 24, 1977, Ser. No. 762,188

Claims priority, application Japan Feb. 3, 1976, 51-11027; Sep. 22, 1976, 51-113923

Int. Cl.[2] H04N *9/535*

U.S. Cl. 358—29 **10 Claims**



1. A picture quality improving apparatus for a color television receiver, comprising:

a color picture tube having: first, second and third cathode electrodes;

red primary signal means for reproducing red primary signal;

first resistance means coupled to said red primary signal means and said first cathode electrode for setting red system nonlinearity n_R;

green primary signal means for reproducing green primary signal;

second resistance means coupled to said green primary signal means and said second cathode electrode for setting green system nonlinearity n_G;

blue primary signal means for reproducing blue primary signal; and

third resistance means coupled to said blue primary signal means and said third cathode electrode for setting blue system nonlinearity n_B;

the values of the resistances of said first, second and third resistance means being selected to satisfy the relation $n_B > n_G \geqq n_R$.

4,127,869

TELEVISION APPARATUS

John D. Millward, Hitchin, England, assignor to The Rank Organisation Limited, London, England

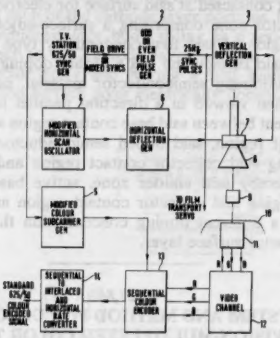
Filed Oct. 28, 1977, Ser. No. 846,567

Claims priority, application United Kingdom, Oct. 28, 1976, 44819/76

Int. Cl.[2] H04N *9/11*

U.S. Cl. 358—54 **3 Claims**

1. In a flying spot telecine apparatus adapted for operation according to the 625/50 television standard and comprising means for driving a cinema film past a scanning position at a rate of 25 film frames per second, means for optically scanning consecutive frames of the cinema film in raster fashion with a light beam of small cross-section, optoelectronic detector means for converting the picture information thereby modulated on the light beam into electrical video signal form, and video processing circuit means for deriving from the electrical video information a television signal comprising consecutive groups of two interlaced television fields containing picture information derived from scanning respective consecutive film frames, the improvement wherein the film driving means is


T.V. STATION 625/50 SYNC GEN
FIELD DRIVE OR MOVIT SYNCS
MOD 50 EVEN FIELD PULSE GEN
25Hz SYNC PULSES
VERTICAL DEFLECTION GEN
MODIFIED HORIZONTAL SCAN OSCILLATOR
HORIZONTAL DEFLECTION GEN
MODIFIED COLOUR SUBCARRIER GEN
35 FILM TRANSPORT SERVO
STANDARD 625/50 COLOUR EXCISED SIGNAL
SEQUENTIAL TO INTERLACED AND HORIZONTAL RATE CONVERTER
SEQUENTIAL COLOUR DECODER
VIDEO CHANNEL

adapted to drive the film with continuous motion, wherein the scanning means is adapted to scan each film frame in sequential mode at a line frequency greater than the standard line frequency and with a vertical scan deflection magnitude greater than would be necessary if the frame were scanned sequentially at the standard line frequency, and wherein the video processing circuit means includes means for converting the electrical video information derived by the scanning into interlaced form and to the standard line frequency.

4,127,870

METHOD AND APPARATUS FOR CHANGING THE PICTURE POINT RESOLUTION OF CONTINUOUS TONE PICTURES DURING TRANSITION FROM REPRODUCTION TO RECORDING

Armin Colditz, Kiel-Wellsee, Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Germany

Filed Oct. 17, 1977, Ser. No. 842,506

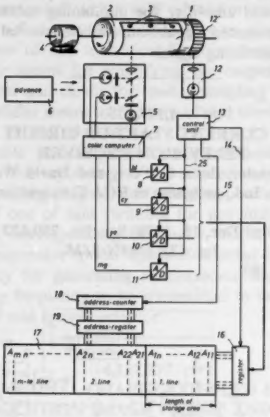
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1976, 2646926

Int. Cl.[2] H04N *1/46*

U.S. Cl. 358—77 **6 Claims**

1. A method for changing the picture point resolution of color separations of continuous tone pictures in multicolor printing processes during transition from the scanning to reproduction in which the original picture is scanned and color separations are obtained from such scanning in the form of electronically stored digital recorded signals of particular raster points of a fine raster and are then converted into a printing raster wherein a raster system is used for printing which has different compression and extension of the distances of the printed raster points in the scan direction and in the direction at right angles to the scan direction, wherein the distances of the raster points in scan direction and the distances of the raster points at right angles to the scan direction have a ratio of integer numbers and wherein the fine raster is selected

such that its raster line interval comprises a multiple of a common divisor of the length resulting from the projection of the



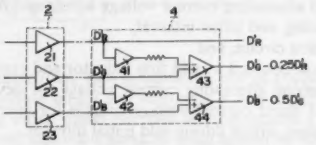
printing raster on a line in scan direction or on a perpendicular line relative to the scan direction.

4,127,871

METHOD OF COLOR CORRECTION INCLUDING TRANSFORMING CO-ORDINATE SYSTEMS OF COLOR SEPARATION SIGNALS

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 13, 1976, Ser. No. 722,376
Claims priority, application Japan, Sep. 12, 1975, 50-111368
Int. Cl.[2] G03F *3/08*
U.S. Cl. 358—80 **1 Claim**



1. A method of color correction for a color scanner, a color facsimile or similar device comprising:

scanning of a color original by spot-by-spot to obtain color separation signals;

changing the color separation signals to color separation density signals in a logarithmic circuit;

transforming co-ordinate systems of the color separation density signals into a different co-ordinate system;

converting the color separation density signals from the different co-ordinate system into digital color separation density signals by an analog-digital converter;

memorizing the digital color separation density signals with addresses in a memory;

calculating the recording signals by addition or subtraction of the correction signals, read out of the memory, to or from the digital color separation density signals;

converting the recording signals into analog signals by a digital-analog converter;

changing the analog signals to color separation signals in an antilogarithmic circuit; and

driving a drive circuit controlling exposing light beams by the use of the color separation signals from the antilogarithmic circuit, wherein said correction signals memorized in said memory are END (equivalent neutral density) correction signals whose co-ordinate systems have been converted according to the conversion of the said color separation signals each of said END correction signals corresponding to the difference between a preestimated color separation density value which a finished print is supposed to have and its END value, wherein the conversion of the color separation signals and the conversion of the co-ordinate systems of END correction signals are carried out in accordance with the following equations;

$$D_R'' = D_R'$$

$$D_G'' = D_G' - 0.25D_R'$$

$$D_B'' = D_B' - 0.5D_G'$$

wherein D_R', D_G' and D_B' represent said digital color separation density signals whose values correspond to the values of said preestimated color separation densities, and D_R'', D_G'' and D_B'' represent converted density values.

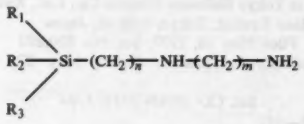
4,127,872

NOVEL AMINO SILOXANE LUBRICANTS

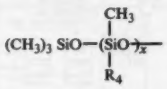
Elizabeth Shen Lo, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1977, Ser. No. 775,161
Int. Cl.[2] C07F *7/10*
U.S. Cl. 358—128 **2 Claims**

1. In information storage means adapted to provide capacitance variations through a pick-up means, said storage means comprising a conductive storage medium in which information is recorded in the form of geometric variations on a conductive surface thereof, a dielectric coating disposed over said conductive surface and a thin coating of a lubricant over said dielectric coating, the improvement wherein said lubricant is an aminosiloxane of the formula



wherein R_1 is methyl or $(CH_3)_3SiO-$, R_2 is methyl, R_3 is



wherein R_4 is methyl or $-(CH_2)_n-NH-(CH_2)_m-NH_2$, n is an integer of at least 3, m is an integer of at least 2 and x can be 0 or an integer, or dimers thereof.

4,127,873

IMAGE RESOLUTION ENHANCEMENT METHOD AND APPARATUS

Kazuo Katagi, Woodland Hills, Calif., assignor to RCA Corporation, Princeton, N.J.

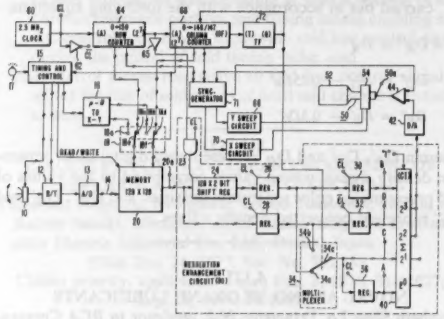
Filed May 20, 1977, Ser. No. 799,079
Int. Cl.[2] H04N *5/14*
U.S. Cl. 358—166 **10 Claims**

1. In an apparatus for displaying, in response to digitized signals representing data cells, variable intensity display elements in a matrix of rows and columns, said signals representing data cells derived from a data image defined by a matrix of rows and columns of said data cells, each cell having a discrete value of a plurality greater than 2 of values, comprising in combination:

means generating a first signal representing the value of a particular one of said data cells, and second signals repre-

senting respectively the values of selected ones of data cells adjacent said one particular data cell,

means responsive to said first signal and said second signals for generating a third signal which is the average of *n* times the value of said one particular data cell and not greater than *n*-1 times the value of each of said adjacent



selected data cells, where *n* is one of the number 2 and 3 equal to the number of said selected adjacent data cells; and

display means responsive to said third signal for intensity modulating the display surface thereof at an intensity corresponding to the value of said third signal.

4,127,874

APPARATUS FOR REMOVING GHOST SIGNALS FROM RECEIVED VIDEO SIGNALS

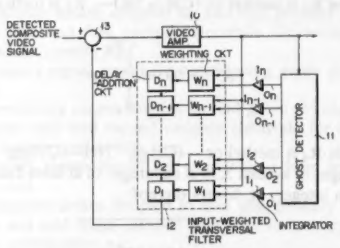
Mineo Iwasawa, Kanagawa; Tatsuo Sakaue, Yokohama; Hikaru Date, Fukuoka, and Takehiro Takamatsu, Izumi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki and Nippon Hoso Kyokai, Tokyo, both of, Japan

Filed May 26, 1977, Ser. No. 800,893

Claims priority, application Japan, May 27, 1976, 51-67870[U]

Int. Cl.[2] H04N *5/14, 5/44*

U.S. Cl. 358—167 **16 Claims**



1. An apparatus for removing an unwanted signal from an incoming signal including a wanted signal and the wanted signal which is the time-delayed wanted signal with a modified amplitude, comprising:

an amplifier for the incoming signal;

detector means coupled to the output of said amplifier and having a plurality of tapped outputs for detecting the time delay and relative amplitude of the unwanted signal to the wanted signal, said detector means being so arranged that, when a signal appears on one of said tapped outputs, the tap position represents the time delay of the unwanted signal to the wanted signal and the amplitude thereof represents the relative amplitude of the unwanted signal to the wanted signal;

transversal filter means connected with the output of said amplifier and the tapped outputs of said detector means for producing a pseudo-unwanted signal substantially equivalent to the unwanted signal; and

subtractor means connected at the output thereof to the input of said amplifier for combining subtractively the pseudo-unwanted signal from said transversal filter means and said incoming signal.

4,127,875

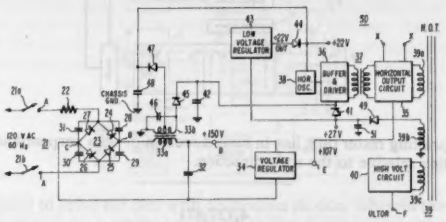
INRUSH CURRENT START-UP CIRCUIT FOR A TELEVISION RECEIVER

Ronald E. Fernsler; John C. Peer, and David W. Luz, all of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,632

Int. Cl.[2] H04N *3/18*

U.S. Cl. 358—190 **11 Claims**



1. A start-up circuit for a television receiver, comprising:

first rectifying means responsive to a source of first alternating current voltage for providing a pulsating direct current voltage;

filter means coupled to said rectifying means for providing a first direct current voltage and in which an inrush current flows during an initial interval;

a first inductor coupled in the path of said inrush current, the time rate of change of said inrush current developing a second alternating current voltage across said first inductor during said initial interval;

a deflection circuit; and

first means coupled to said first inductor and responsive to said second alternating current voltage for developing a second direct current voltage suitable for operating said deflection circuit during said initial interval.

4,127,876

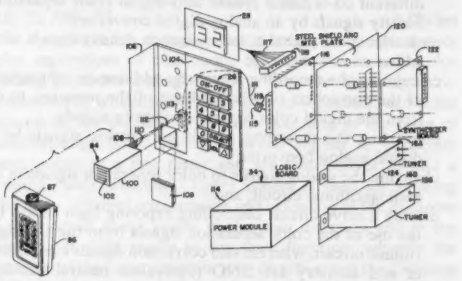
VIEWER ADAPTABLE REMOTE CONTROL APPARATUS FOR TV RECEIVER

Jack Schwartz, Niles, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed Feb. 8, 1977, Ser. No. 766,587

Int. Cl.[2] H04N *5/44*

U.S. Cl. 358—194 **15 Claims**



1. In a television receiver, a readily adaptable apparatus for

providing a remote control of selected functions of said television receiver, said remote control apparatus comprising:

(a) an optional detachable remote adaptor adapted to be readily mounted within said television receiver and including a first transducer responsive to ultrasonic sounds indicative of the television function being controlled, amplifier means for amplifying the output of said first transducer and means for readily coupling the output of said amplifier means to circuitry of said television receiver without the use of tools; and

(b) a remote transmitter including mannually-actuatable switches corresponding to the television functions to be controlled, signal generator means responsive to the actuation of one of said switches for providing a signal of selected, corresponding frequency, and a second transducer responsive to the signal of selected corresponding frequency for generating an ultrasonic sound of corresponding frequency to be transmitted to said first transducer of said remote adaptor.

4,127,877

TWO-DIMENSIONAL CHARGE-COUPLED DEVICE FOR HIGH-RESOLUTION IMAGE PICKUP AND THE LIKE

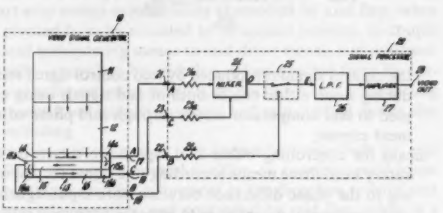
Masanobu Morishita, and Yasuo Ishihara, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1975, Ser. No. 618,416

Claims priority, application Japan, Oct. 2, 1974, 49-113412

Int. Cl.[2] H04N *3/14, 5/14*

U.S. Cl. 358—213 **1 Claim**



1. In combination, two dimentional charge-coupled device means including means for supplying a first electrical wave comprising video signal portions of substantially a predetermined period, said wave portions being spaced by substantially said predetermined period, delaying means for supplying at least one replica of said first electrical wave each delayed by a different integral multiple of said predetermined period, and means for algebraically summing said first electrical waves and said delayed replicas thereof, wherein said summing means includes switching means operable at a rate given by said predetermined period for converging said video signals supplied by said charge-coupled device means.

4,127,878

MAGNETIC TAPE RECORDER/REPRODUCER FOR RATIO RECORDING WITH SYNCHRONIZED INTERNAL AND EXTERNAL CLOCK RATES

Clark E. Johnson, Jr., Weston, and Eugene P. Johnson, Arlington, both of Mass., assignors to Micro Communications Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 644,083, Dec. 24, 1975, abandoned. This application Jun. 28, 1976, Ser. No. 700,521

Int. Cl.[2] G11B *5/09*

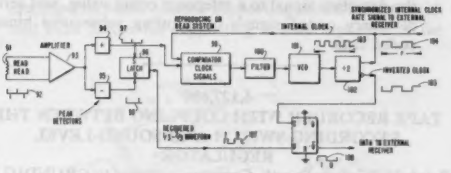
U.S. Cl. 360—51 **29 Claims**

1. A data processing system comprising:

clock means for generating an internal, variable rate clock signal;

comparator means receiving an external clock signal and producing an error signal indicative of the difference between the rate of the internal clock signal and the rate of the external clock signal;

control means responsive to said error signal for varying the rate of said internal clock signal to synchronize its rate with the rate of said external clock signal, and



interface means for converting between a first signal containing a self-clocked, single-channel, ratio-encoded data stream and a second signal containing dual-channels with a timing signal on one channel and a time-correlated data stream on the other channel, said interface means utilizing said synchronized internal clock signal for the conversion between said first and second signals.

4,127,879

DATA READ-WRITE APPARATUS FOR A MAGNETIC RECORDING MEDIUM

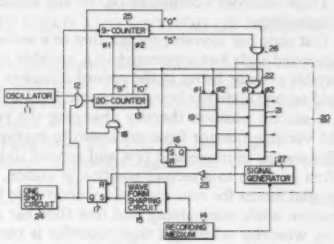
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1976, Ser. No. 702,899

Claims priority, application Japan, Jul. 4, 1975, 50-82579; Oct. 21, 1975, 50-125869

Int. Cl.[2] G11B *5/09*

U.S. Cl. 360—51 **4 Claims**



1. A data read-write apparatus for reading binary coded data from and writing binary coded data into a magnetic recording medium in synchronization with clock pulses from a clock pulse generating means, the apparatus comprising:

a clock pulse generating means including a reference clock pulse generator for generating *n* clock pulses during a one-bit reading or writing period, and an *n*-scale counter driven by the clock pulses from the reference clock pulse generator;

synchronization pulse generator means coupled to said *n*-scale counter for generating a bit synchronization clock pulse every time said *n*-scale counter reaches a predetermined count;

means for writing into the magnetic recording medium a binary coded signal "1" having at least one bit ahead of said binary coded data in synchronization with a bit synchronization pulse from said synchronization pulse generator means, and then a series of binary coded signals forming said binary coded data in succession of the binary coded signal "1";

means coupled to said magnetic recording medium and to said *n*-scale counter for detecting the binary coded signal "1" being read out ahead of the binary coded data from the magnetic recording medium, to thereby produce a

detection signal which sets the *n*-scale counter at the reference count so as to adjust the phase of the bit synchronization clock pulse; and

means for reading out a series of binary coded signals by bit synchronizing clock pulses generated for each predetermined numerical value of the *n*-scale count which is set by the detection signal to a reference count value, said series of binary coded signals constituting subsequent binary coded data.

4,127,880

TAPE RECORDER WITH COUPLING BETWEEN THE RECORDING-SWITCH AND SOUND-LEVEL REGULATOR

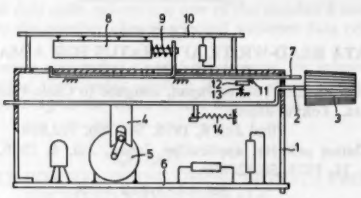
Reinhold Emmert, Fuerth, Germany, assignor to GRUNDIG E. M. V. Elektro-Mechanische Versuchsanstalt, Fuerth, Germany

Filed Jul. 13, 1977, Ser. No. 815,195

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1977, 2635002

Int. Cl.[2] G11B *5/02, 15/04*

U.S. Cl. 360—68 **9 Claims**



1. In a tape recorder a combined on/off and sound regulating switch including:

(a) a first slide bar movable from a first to a second position,

(b) a second slide bar connected to a variable resistor, said variable resistor being in the record circuitry,

(c) said second slide bar being moveable from a first position to a second position thereby changing the resistance of said variable resistor from minimum to maximum,

(d) first means to move said first and second slide bars from a first position to a second position in unison,

(e) second means for returning said second slide bar to a first position while maintaining said first slide bar in said position, whereby when said tape recorder is turned on said variable resistor exhibits maximum resistance and thereafter returns to minimum resistance so that transient noise pulses are not recorded.

4,127,881

TRACKING CONTROL SYSTEM FOR MAGNETIC VIDEO RECORDING AND REPRODUCING SYSTEM

Noboru Wakami, Hirakata, and Masahiro Deguchi, Yao, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 18, 1976, Ser. No. 733,123

Claims priority, application Japan, Oct. 21, 1975, 50/127159; Nov. 12, 1975, 50/136504; Dec. 16, 1975, 50/150288; Dec. 16, 1975, 50/150289; Jun. 11, 1976, 51/69232

Int. Cl.[2] G11B *21/10, 15/46*

U.S. Cl. 360—70 **9 Claims**

1. A tracking control system for a magnetic video recording and reproducing system comprising:

a tape drive means for driving a magnetic tape bearing an information signal recorded as record tracks at an angle with respect to the longitudinal direction of the tape and also bearing a control signal recorded along an edge of the tape in a predetermined positional relation to the record tracks;

a rotary head drive means for driving rotary heads such that the record tracks on said magnetic tape are scanned by the heads;

a peak hold circuit for holding a value substantially corresponding to the peak value of the envelope of a reproduced signal output from said rotary heads;

an envelope detector circuit for obtaining the envelope of the reproduced signal output from said rotary heads;

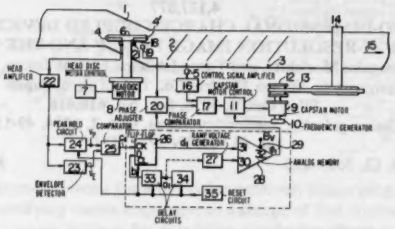
a detecting means for producing a detection signal when the outputs of said peak hold circuit and of said envelope detector circuit are identical to each other;

a phase signal generating means for producing a phase signal representing the rotational phase of said rotary heads;

a control signal reproducing head for reproducing said control signal;

a phase adjustment circuit responsive to the output of said phase signal generating means for controllably shifting the phase of said phase signal in accordance with a phase control signal added thereto;

a phase comparator means for comparing the phases of the phase signal from said phase signal generating means and



the control signal reproduced by said control signal reproducing head, either one or both of said signals being coupled to said comparator means through said phase adjustment circuit;

means for controlling either said tape drive means or said rotary head drive means according to a signal corresponding to the phase difference between both input signals to said comparator means so as to vary the positional relation between the scanning tracks of said rotary heads and the record tracks on said magnetic head;

a phase adjustment circuit control means for generating said phase control signal to be added to said phase adjustment circuit, said phase control signal varying its phase at a constant cycle so that the phase of said phase signal is varied periodically, said phase adjustment circuit control means including a locking means for locking said phase adjusting means in accordance with the detection output of said detecting means so that said phase control signal is held to the phase at the instant of receipt of said detection output.

4,127,882

CHANGE-OVER MECHANISM FOR RECORDING MEDIA, ESPECIALLY FOR FLOPPY DISKS

Lambert Kohl, Wachenheim; Richard Schneider, Heidelberg-Neuenheim, and Karl Uhl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 25, 1976, Ser. No. 717,537

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612853; Jul. 22, 1976, 2632923

Int. Cl.[2] G11B *17/12*

U.S. Cl. 360—98 **11 Claims**

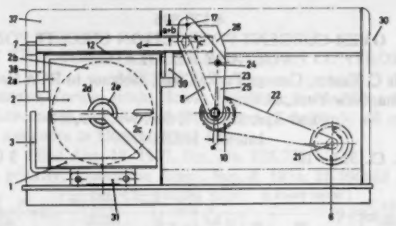
1. In a record-changing apparatus for disk-shaped recording media in which, incident to a record-changing operation, one of a plurality of recording media is positioned in a standby position, a loading and unloading arrangement for moving said recording medium to or from an operative position in a record-

ing and playback device, said device including a drive spindle having a conically recessed head, a pivotally mounted flap carrying a conically-shaped clamping element cooperating with said head, and actuating means for pivoting said flap with said clamping element thereon from a normal angular position in a direction towards said head so as to clamp said recording medium, when in said operative position, against said head and hence into effective driven engagement by said spindle, or vice versa,

said arrangement comprising:

means for transporting said recording medium from said standby position to said operative position, and vice versa, at right angles to the plane of motion of said flap,

drive means for driving said drive spindle and said transporting means, and



control means mechanically interposed between said flap and said transporting means, said control means including

start-stop means mechanically controlled by said flap, when pivoted from its actuated to its normal position, to couple said transporting means to said drive means, and mechanically controlled by said flap, when pivoted from its normal to its actuated position, to uncouple said transporting means from said drive means, and said control means also including

direction-control means mechanically controlled by said flap, when in its normal position, to condition said transporting means for movement in the direction toward said operative position, and controlled by said flap, when in a position other than said normal position to condition said transporting means for movement in the opposite direction.

4,127,883

SUPPORTING MECHANISM FOR MAGNETIC TAPE RECORDER

Gilbert E. Mestdagh, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,965

Claims priority, application Netherlands, Jun. 21, 1976, 7606690

Int. Cl.[2] G11B *5/54*

U.S. Cl. 360—105 **16 Claims**

1. A tape recorder for use with a cassette on which magnetic tape is wound between two hubs, comprising:

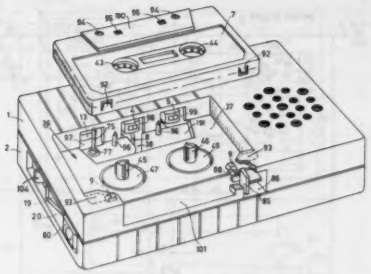
a housing section formed as a unitary mass of molded plastic material,

a magnetic head unit comprising a magnetic head holder and at least one magnetic playback head,

means for moving magnetic tape in a cassette which has been inserted into the recorder in a direction of tape transport past said at least one head,

means for mounting the magnetic head unit to the housing section to be movable relative to the section in a first direction between a retracted position in which a cassette can be inserted into or removed from the recorder, and an operating position in which the magnetic head can operatively engage magnetic tape in a cassette which has been inserted into the recorder; and in a second direction transverse to said first direction of movement and transverse to said direction of tape transport, and

means for supporting a cassette inserted in the recorder so arranged that when the magnetic head unit is in the operating position the position of the cassette is defined relative to the magnetic head, said means for supporting including a movable cassette supporting means integral with said head holder for supporting at least a portion of the



cassette adjacent said at least one head, the position of the movable cassette supporting means in said second direction, when the magnetic head unit is in the operating position, being determined by the magnetic head unit, so that upon inserting a cassette into the tape recorder, and movement of the magnetic head unit to the operating position, the position of at least a portion of the cassette in said second direction is determined directly by the position of the magnetic head unit.

4,127,884

MAGNETIC HEAD AND METHOD OF MAKING THE SAME

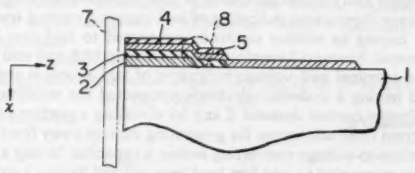
Norimoto Nouchi, Katano; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 28, 1977, Ser. No. 782,247

Claims priority, application Japan, Mar. 30, 1976, 51-35847

Int. Cl.[2] G11B *5/30*

U.S. Cl. 360—119 **6 Claims**



1. A magnetic head comprising;

a ferromagnetic substrate,

a groove formed in part of said ferromagnetic substrate,

a filler filled in said groove, said filler containing a conductive material,

a ferromagnetic layer provided in a region extending over the top area of said groove,

a magnetic gap formed between said ferromagnetic substrate and said ferromagnetic layer on one side of said groove, and

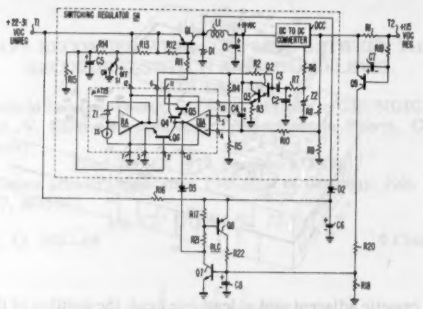
a magnetic coupling provided between said ferromagnetic substrate and said ferromagnetic layer formed on the other side of said groove,

said magnetic gap and said magnetic coupling constituting a magnetic core of said magnetic head.

4,127,885
OVER-CURRENT PROTECTION CIRCUIT FOR VOLTAGE REGULATOR

Kenneth C. Adam, Thousand Oaks, and Finis C. Easter, Canoga Park, both of Calif., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1977, Ser. No. 789,654
Int. Cl.[2] H02H 7/20
U.S. Cl. 361—18 **3 Claims**



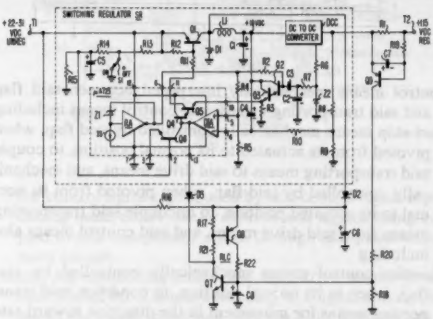
1. In a voltage regulator including: first and second load terminals; a source of input current referred to said first load terminal; regulating transistor means having a first, control electrode and having second and third electrodes and a controlled principal conduction path therebetween, the conduction of said principal conduction path being controlled responsive to the potential appearing between the first and second electrodes of said regulating transistor means; means for connecting the controlled principal conduction path of said regulating transistor means to control the flow of current from said source of input current to said load terminals, thereby to control the potential appearing between said load terminals; means for generating a current responsive to said potential appearing between said load terminals; current-to-voltage converting means for applying a potential between the first and second electrodes of said regulating transistor, the magnitude of which potential is responsive to current received from said means for generating a current; threshold detection means connected to respond to current flow through one of said first and said second load terminals exceeding a prescribed level to supply a current indicative of said excess; a first resistor connected to conduct said current indicative of said excess for developing a voltage thereacross indicative of said excess; a control transistor having an emitter electrode connected to said first load terminal, having a base electrode between which and said first load terminal said voltage indicative of said excess is applied and having a collector electrode connected for satisfying its collector current demand if any by diverting a portion of the current from said means for generating current away from said current-to-voltage converting means; a capacitor having a first plate connected to said first load terminal and having a second plate; a charging resistance connecting said source of input current to the second plate of said capacitor; and an auxiliary transistor of complementary conductivity type to said control transistor, said auxiliary transistor having an emitter electrode connected to the second plate of said capacitor, having a base electrode to which the collector electrode of said control transistor is connected and having a collector electrode connected to the base electrode of said control transistor, whereby said auxiliary transistor is included in a direct-coupled regenerative feedback connection from the collector electrode of said control transistor to its base electrode, said regenerative feedback connection being operative so long as the potential between the respective emitter electrodes of said control and auxiliary transistors is sufficiently large to sustain conduction in those transistors, the combined conduction tending to discharge said capacitor more rapidly than it can be recharged via said charging resistance, thereby tending to cause a decay in the potential between the respective emitter electrodes of said control and auxiliary transistors, which decay when sufficiently advanced disables the operation of said direct-coupled regenerative feedback connection, reconditioning said improved voltage regulator for power-up operation; the improvement comprising:

means responsive to the disabling of said direct-coupled regenerative feedback connection for charging said capacitor to a predetermined level at a faster rate than it can be discharged by the combined conduction of said control and auxiliary transistors should recurrence of said indicative current, due to continuing short-circuiting of said first and second load terminals, again initiate conduction in said control transistor and cause said direct-coupled regenerative feedback connection to be re-established.

4,127,886
OVER-CURRENT PROTECTION CIRCUIT FOR VOLTAGE REGULATOR

Finis C. Easter, Canoga Park, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1977, Ser. No. 789,657
Int. Cl.[2] H02H 7/20
U.S. Cl. 361—18 **3 Claims**



1. In a voltage regulator including first and second load terminals; a source of input current referred to said first load terminal; regulating transistor means having a first, control electrode and having second and third electrodes and a controlled principal conduction path therebetween, the conduction of said principal conduction path being controlled responsive to the potential appearing between the first and second electrodes of said regulating transistor means; means for connecting the controlled principal conduction path of said regulating transistor means to control the flow of current from said source of input current to said load terminals thereby to control the potential appearing between said load terminals; means for generating a current responsive to said potential appearing between said load terminals; and current-to-voltage converting means for applying a potential between the first and second electrodes of said regulating transistor means, which potential is responsive to current received from said means for generating a current; improved over-current protection means responsive to an excessive demand for current through said load terminals for diverting a portion of the current from said means for generating current away from said current-to-voltage converting means comprising:

threshold detection means connected to respond to current flow through one of said first and said second load terminals exceeding a prescribed level to supply a current indicative of said excess;

a first resistor connected to conduct said current indicative of said excess for developing a voltage thereacross indicative of said excess;

a control transistor having an emitter electrode connected to said first load terminal, having a base electrode between

which and said first load terminal said voltage indicative of said excess is applied, and having a collector electrode connected for diverting said portion of current from said means for generating current; and

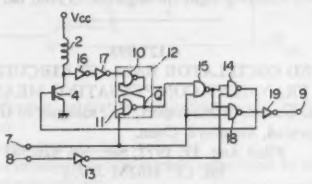
a direct-coupled regenerative feedback connection from the collector electrode of said control transistor to its base electrode operative for tending to sustain conduction in said control transistor, once initiated, whether or not said potential indicative of said excess continues to be developed, for shutting down said voltage regulator and thus forestalling rapid oscillations in the potential appearing between said load terminals when the current flow through said one of said first and second load terminals exceeds said prescribed level.

4,127,887

SAFETY TEST CIRCUIT FOR COMBUSTION CONTROL APPARATUS

Toshio Tanaka, Toride; Juichi Honda, Fujisawa; Sadao Mimori, Yoshikawamachi, and Kazutoshi Ikegami, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 18, 1977, Ser. No. 825,725
Claims priority, application Japan, Sep. 8, 1976, 51-106663
Int. Cl.[2] H02H *3/26*
U.S. Cl. 361—86 **9 Claims**



1. A safety test circuit for a combustion control apparatus, comprising:

output terminal means for connection with the combustion control apparatus in use;

a transistor having a collector, an emitter and a base, said transistor being for actuating in its conductive state an external safety unit which acts when actuated to stop the operation of an external combustion unit in the event of occurrence of an abnormal situation during continuous combustion;

means for applying a potential across the collector and emitter of said transistor; and

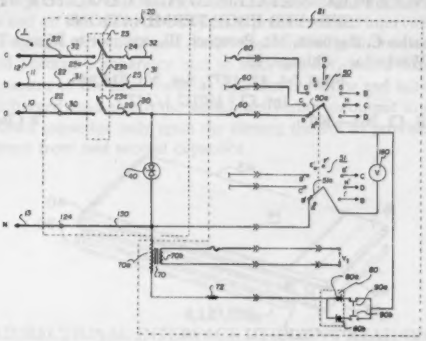
logic circuit means adapted to receive a first signal representing the potential at the collector of said transistor and a second signal applied externally to instruct the operation of said combustion control apparatus, said logic circuit including a first output connected to the base of said transistor, a second output connected to said output terminal means, means for generating, in response to the application of said second signal, a pulse signal having a pulse duration shorter than the length of time required for said external safety unit to be actuated completely in response to the conduction of said transistor, utilizing the electrical signal propagation delay time of part of circuit elements constituting said logic circuit means, and means for applying an actuating signal from said first output to the base of said transistor during the lasting period of said pulse signal to render said transistor conductive, whereby said transistor is checked for its off-failure by detecting the level of said first signal which changes depending on whether said transistor has conducted or not and upon the completion of said off-failure check an output signal is produced from said second output of said logic circuit means.

4,127,888

SURGE PROTECTOR AND TEST NETWORK FOR AC EQUIPMENT

Barry M. Epstein, 7523 Cliffbrook, Dallas, Tex. 75240

Filed Aug. 18, 1977, Ser. No. 825,825
Int. Cl.[2] H02H *3/22*
U.S. Cl. 361—91 **8 Claims**



1. In a system for supplying three phase power from a voltage source to a load, surge voltage protection apparatus comprising:

(a) a plurality of surge voltage suppressors respectively connected to the three phase supply lines by way of first switching means adapted to switchably connect and disconnect, said voltage suppressors with said voltage source, and

(b) test network means interconnected with, and across, said plurality of surge voltage suppressors for monitoring the status of voltages in each of the three phases and for testing the status of the surge voltage suppressors,

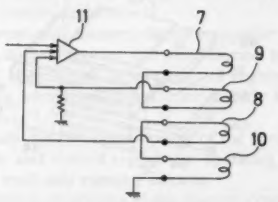
(c) said first switching means, when closed, enabling said test network means to monitor said three phase voltages and, when open, enabling said test network means to test the status of said surge voltage suppressors.

4,127,889

ELECTROMAGNETIC DAMPING MECHANISM FOR FORCE MOTOR

Masuyuki Asano, Nishikasugai, and Shojiro Omuro, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Nov. 1, 1976, Ser. No. 737,341
Claims priority, application Japan, Oct. 31, 1975, 50-131261
Int. Cl.[2] H02K *35/00*
U.S. Cl. 361—159 **6 Claims**



1. A force motor comprising a movable drive frame, a drive coil and damping coil attached to said drive frame, fixed magnetic field means disposed about said drive frame, a signal current supplied to said drive coil for causing movement of said drive frame, a first static coil connected to said magnetic field means adjacent said drive coil for offsetting the magnetic flux induced in said drive coil when said drive coil is supplied

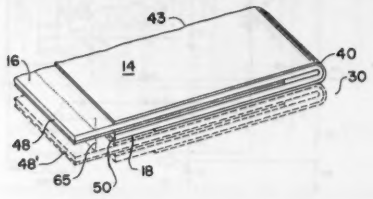
with the signal current, and a second static coil connected to said magnetic field means adjacent said damping coil for offsetting the magnetic flux induced in said damping coil when said drive coil is supplied with the signal current.

4,127,890

SINGLE PLEAT METALLIZED FILM CAPACITOR WITH SPRAYED EDGE TERMINATIONS

Charles C. Rayburn, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 12, 1977, Ser. No. 814,945
Int. Cl.[2] H01G 1/147
U.S. Cl. 361—309 **8 Claims**



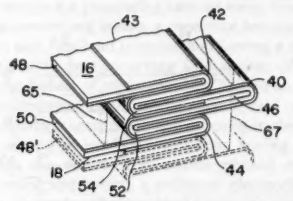
1. An electrical capacitor segment comprising a dielectric layer having a center line, a first metallized electrode layer applied to one side of said dielectric layer so that an unmetallized margin extends along each edge of a pair of parallel edges of said dielectric layer, second and third metallized electrode layers applied to the other side of said dielectric layer so that a centrally located unmetallized strip runs between said second and third metallized layers, said dielectric layer being pleated once along said unmetallized center strip slightly off of said center line so that one edge of said margin containing edges extends beyond the other of said edges along the same end of said capacitor segment and a first metallized spray material in contact with only one of said second or third electrode layers at said same end of the segment, with said first electrode area having a second metallized spray material at the other end of the segment.

4,127,891

PLEATED METALLIZED FILM CAPACITOR WITH SPRAYED EDGE TERMINATIONS

Charles C. Rayburn, Mount Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 12, 1977, Ser. No. 814,958
Int. Cl.[2] H01G 1/147
U.S. Cl. 361—309 **18 Claims**



1. An electrical capacitor segment comprising at least one group of pleated layers comprising a dielectric layer, a first metallized electrode layer applied to one side of said dielectric layer so that an unmetallized margin extends along each edge of a pair of parallel edges of said dielectric layer, second and third metallized electrode layers applied to the other side of said dielectric layer so that a centrally located unmetallized strip runs between said second and third metallized layers, said dielectric layer being pleated M number of times where M = 5 + (N)4 and N may be zero or any positive interger so that the center pleat of said pleated dielectric strip extends along one end of said pleated dielectric layer beyond the other pleats that extend along the same end as said center pleat while the edges of said metallized dielectric strip which contain said margins extend along the opposite end of said pleated dielectric layer beyond the other pleats that extend along the same end as said margin containing edges and metallized spray material sprayed against both of said ends, but without penetration of said spray far enough to contact any of said pleats except said center pleat.

4,127,892

LIGHTED ELEMENT FOR DECORATION

Friedhelm Bakalowits, Vienna, and Carl Zalloni, Salzburg, both of Austria, assignors to E. Bakalowits Sohne Gesellschaft m.b.H., Vienna, Austria

Filed Apr. 27, 1977, Ser. No. 791,207
Claims priority, application Austria, Apr. 27, 1976, 3091/76
Int. Cl.[2] F21V 7/04
U.S. Cl. 362—32 **8 Claims**

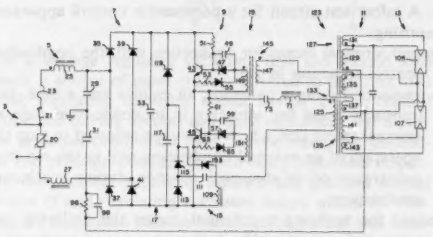
1. A lighting fixture comprising an element for decoration including a carrier, at least one crystal glass bar, and a wire which extends through said bar throughout the length thereof and by which the bar is attached at least at one end thereof to the carrier, and a light source disposed in close proximity to said bar for emitting light through the crystal bar.

4,127,893

TUNED OSCILLATOR BALLAST CIRCUIT WITH TRANSIENT COMPENSATING MEANS

Charles A. Goepel, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 17, 1977, Ser. No. 826,541
Int. Cl.[2] H02M 5/458
U.S. Cl. 363—37 **7 Claims**



5. A tuned oscillator ballast circuit comprising:

an AC potential source;

a pulsed AC potential development circuit coupled to said AC potential source;

a tuned oscillator for providing a high frequency output potential coupled to said pulsed DC potential development circuit;

a load energizing circuit including a first transformer having a primary winding coupled to said tuned oscillator and a secondary winding coupled to a load circuit;

an oscillator drive circuit including a second transformer having a primary winding in series connection with said secondary winding of said first transformer and a secondary winding coupled to said tuned oscillator whereby drive for said tuned oscillator is dependent upon current flow in said load energizing circuit;

a rectifier circuit coupled to said load energizing circuit for developing a DC potential from said high frequency output potential;

a charge storage and selective isolating and applying circuit shunting said pulsed DC potential development circuit

and coupled to said rectifier circuit, said circuit selectively providing a charge in response to a decrease in said pulsed DC potential below a given reference level whereby said load circuit is energized by a substantially constant DC potential; and

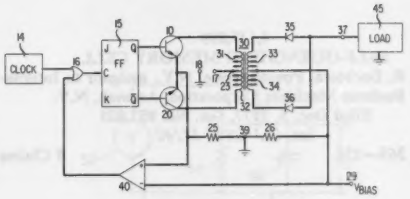
a transient current compensating circuit coupling said load energizing circuit to said charge storage and selective isolating and applying circuit and shunting said rectifier circuit.

4,127,894

CONVERTER PROTECTION CIRCUIT OPERATIVE TO LIMIT AND COUNTERACT TRANSFORMER SATURATION

John D. Bishop, Morristown; Patrick W. Clarke, Murray Hill, and William J. Schatz, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1977, Ser. No. 851,519
Int. Cl.[2] H02M *1/18*
U.S. Cl. 363—56 **13 Claims**



1. Transformer saturation limitation means comprising in combination:

signal comparison means including

first input means to accept signals responsive to current in a transformer primary;

second input means to accept signals responsive to current in a transformer secondary; and

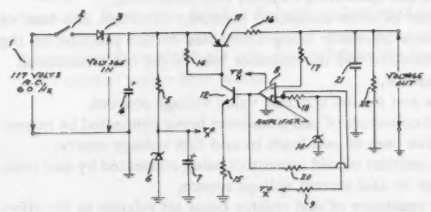
means responsive to an output of said signal comparison means to reverse a polarity of voltage applied to the transformer primary when an output of the signal comparison means indicates an occurrence of saturation of a magnetic core common to said transformer primary and secondary.

4,127,895

CHARGE-TRANSFER VOLTAGE CONVERTER

Paul J. Krueger, 2746 B Socorro Loop, Holloman AFB, N. Mex. 88330

Filed Aug. 19, 1977, Ser. No. 826,228
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—86 **3 Claims**



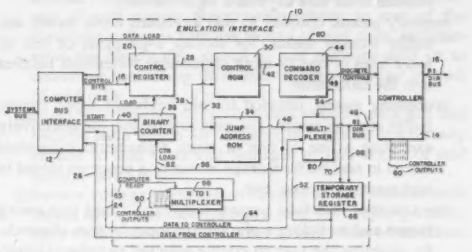
1. A charge-transfer voltage converter comprised of a prime power source supplying a rectifier receiving said line current, said rectifier conducting on alternate a positive half-cycles, a first capacitor initially uncharged and of a preselected value connected to said rectifier, said first capacitor being charged thereby, a Zener diode, a shunt capacitor for said Zener diode, a first resistor in series with said Zener diode, said resistor receiving an output from said rectifier, said first resistor, Zener diode and shunt capacitor forming an auxiliary regulated power supply, a voltage comparator having a positive feedback and a resistance voltage divider network adapted to provide hysteresis about a set output voltage value, said voltage comparator being operated by said auxiliary regulated power supply, a reference voltage source also supplying said voltage comparator, an electronic switch, a transistor turning on and off said electronic switch at predetermined intervals by acting as a driver thereof, said transistor being connected to said voltage comparator and to said rectifier, and a second capacitor of the same value as said first capacitor and initially uncharged, said electronic switch delivering an output to said second capacitor only upon the closing thereof to provide an output from said second capacitor.

4,127,896

BIDIRECTIONAL INTERFACE UTILIZING READ-ONLY MEMORY, DECODER AND MULTIPLEXER

John M. Raslavsky, III, Phoenix, Ariz., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 10, 1977, Ser. No. 823,432
Int. Cl.[2] G06F *5/00, 3/00*
U.S. Cl. 364—200 **10 Claims**



1. An interface system for matching control code signals and data signals between a data processing unit and a controller which employ different control code formats, comprising:

a control register for receiving control code signals from the data processing unit and having an input and an output;

a first read-only memory circuit responsive to the output of said control register and programmed to provide discrete control signals corresponding to the control code signals in said control register;

a second read-only memory circuit responsive to the output of said control register and programmed to convert the control code signals in said control register into corresponding commands in the control code format of the controller;

clock means initiated upon loading of the control code signals into said control register for operating said first and second read-only memory circuits;

decoder means responsive to the discrete control signals of said first read-only memory circuit for applying discrete controls to the controller to condition its registers to receive commands or data signals and for generating a select signal; and

means responsive to said select signal generated by said decoder means for selectively applying either commands from said second read-only memory circuit or data signals from the data processing unit to the controller.

4,127,897

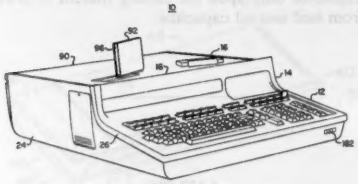
PROGRAMMABLE CALCULATOR HAVING EXTENDED INPUT/OUTPUT CAPABILITY

Richard M. Spangler; Eugene V. Burmeister; Frank E. Cada; Wayne F. Covington; Chris J. Christopher; Myles A. Judd; Freddie W. Wenninger; Robert E. Watson, and Kent W. Simcoe, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 469,727, May 30, 1974, Pat. No. 4,012,725, which is a continuation of Ser. No. 269,899, Jul. 7, 1972, abandoned. This application Jan. 19, 1977, Ser. No. 760,801

Int. Cl.[2] G06F *3/00, 5/02, 3/02*

U.S. Cl. 364—900 **5 Claims**



1. An electronic calculator comprising:

keyboard input means for entering lines of alphameric information, including alphameric statements of one or more alphameric characters each, into the calculator;

buffer storage means coupled to said keyboard input means for storing each line of alphameric information as it is entered from said keyboard input means;

memory means, coupled to said keyboard input means and buffer storage means, for storing a program of one or more lines of one or more alphameric statements entered into the calculator;

processing means, coupled to said keyboard input means, buffer storage means, and memory means, for selectively executing a line of one or more alphameric statements stored in said buffer storage means or a program stored in said memory means; and

input/output interface means, coupled to said processing means and including a plurality of input/output channels, for enabling the user to couple selected peripheral input-/output units to the calculator;

said processing means including logic means responsive to execution by said processing means of a binary output statement, including specification of one of said plurality of input/output channels and a base ten number, that has been entered from said keyboard input means or stored as part of a program in said memory means, for converting said base ten number to a corresponding twelve-bit binary code and for transmitting said twelve-bit binary code to the specified one of said input/output channels.

4,127,898

STORAGE ELEMENT FOR AN ERASABLE, DIGITAL PERMANENT STORAGE

Dieter Fischer, Frankfurt am Main, Fed. Rep. of Germany, assignor to Battelle-Institute e.V., Frankfurt am Main, Fed. Rep. of Germany

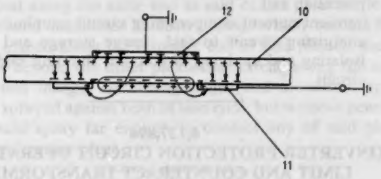
Filed Jun. 20, 1977, Ser. No. 808,360

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627249

Int. Cl.[2] G11C *11/00*

U.S. Cl. 365—146 **2 Claims**

2. A storage element for an erasable, digital permanent memory wherein a bipolar charged electret, in the form of a foil or a thin layer, serves as a storage medium, comprising an electret foil having a thin, electrically conducting layer evaporated onto one surface and a ring electrode evaporated onto an opposite surface; means to charge said electret causing a bias voltage between the ring electrode and the conductive layer;



and means to apply a voltage pulse balanced to ground to the conductive layer and to the ring electode.

4,127,899

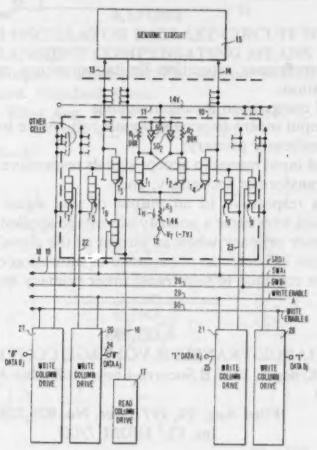
SELF-QUENCHING MEMORY CELL

William R. Dachtera, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,831

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—154 **5 Claims**



1. A self-quenching memory cell comprising:

a pair of cross-connected transistor inverters, the base of each transistor being connected to the junction of the collector and the collector load of the other transistor,

a resistor,

first and second constant value voltage sources,

said collectors of said transistors being connected by respective ones of said loads to said first voltage source,

the emitters of said transistors being connected by said resistor to said second voltage source,

the resistance of said resistor being set relative to the effective impedance of said cross-connected transistor inverters so that said resistor and said second voltage source do not provide a constant current to said emitters when data is written into said cell,

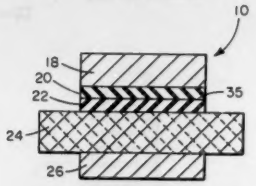
first actuable means connected to said bases of said transistors for writing data into said cell, and

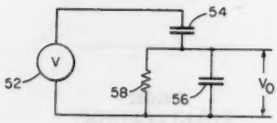
second actuable means connected to said bases of said transistors for reading data from said cell.

4,127,900
READING CAPACITOR MEMORIES WITH A VARIABLE VOLTAGE RAMP

Jack I. Raffel, and John A. Yasaitis, both of Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 737,165, Oct. 29, 1976. This application Jun. 20, 1977, Ser. No. 808,068
Int. Cl.[2] G11C 7/00, 11/24
U.S. Cl. 365—191 15 Claims





1. The process of reading a selected cell of a capacitor memory array, the array comprising a plurality of isolated capacitor cells, each cell including at least a first conductive layer, a first dielectric insulating layer, a second dielectric insulating layer, a doped semiconductor layer, and a second conductive layer, the first conductive layers of said cells being grouped and interconnected into a plurality of word lines and the second conductive layers of said cells being grouped and interconnected into a plurality of digit lines, one each of said digit and word lines uniquely identifying a capacitor cell, and each cell having two capacitance states, the process including the steps of

applying a variable potential between the word and digit lines identifying the selected cell, said variable potential having a voltage range extending at least in part across a "flat-band" portion of a known voltage-capacitance relationship for said cell, the maximum magnitude of said variable potential being sufficiently small so that the state of said selected cell is not changed,

biasing substantially all unselected cells into a depletion state,

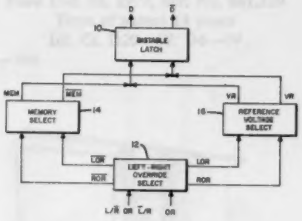
measuring the current flowing through said selected capacitor cell as a function of said voltage versus time, and

determining the state of said capacitor cell from the shape of the current versus time profile.

4,127,901
MNOS FET MEMORY RETENTION CHARACTERIZATION TEST CIRCUIT

Merton A. Horne, Eagan, and Thomas A. Pogemiller, Burnsville, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 3, 1977, Ser. No. 821,272
Int. Cl.[2] G11C 11/40, 7/00
U.S. Cl. 365—205 12 Claims



1. A sense latch circuit selectively operable in either a read or a memory retention interrogation mode for reading binary data from a plurality of semiconductor memory cells each of said cells comprised of at least one variable threshold transistor, or for testing each of the memory cells to determine the plurality of analog threshold voltages peculiar to each of the cells, comprising:

a bistable latch means having two stable states and first and second output nodes for comparing two signals, at least one of said signals functionally related to one of the threshold voltages peculiar to one of said cells, to determine the binary data stored in said memory cells or to determine the analog threshold voltages peculiar to each of said cells;

memory select means coupled to said memory cells and said bistable latch means for coupling said signals functionally related to said threshold voltages to said nodes of said bistable latch means;

reference voltage select means coupled to said bistable latch means and a reference voltage source for coupling a reference voltage to one or the other of said nodes of said latch means;

override select means coupled to said memory select means and said reference voltage select means for selectively coupling said reference voltage and said signals functionally related to said threshold voltages to said bistable latch means in either said read interrogation mode or said memory retention interrogation mode and responsively switching said bistable latch between its stable states;

the stable states of said bistable latch means in said read mode corresponding to binary information stored in said memory cells;

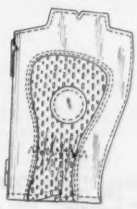
the stable states of said bistable latch means in said memory retention interrogation mode indicative of the plurality of analog threshold voltages peculiar to each of said plurality of said memory cells tested.

DESIGNS

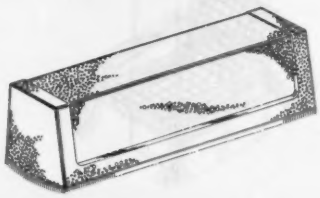
NOVEMBER 28, 1978

250,366
FROZEN CONFECTION
Frank Urban, 143 Altair Dr., Sewell, N.J. 08080
Filed Oct. 14, 1976, Ser. No. 732,517
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

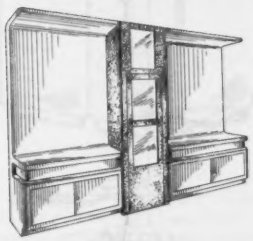
250,367
BOWLING GLOVE
Richard H. Coon, Hopkinsville, Ky., assignor to National Athletic Supply Corp., Paramus, N.J.
Filed Jul. 13, 1977, Ser. No. 815,257
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



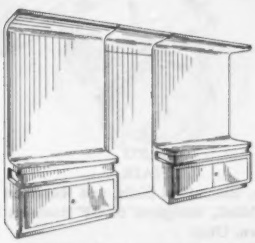
250,368
PAINT APPLICATOR
Virgil R. Morefield, Wooster, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed May 23, 1977, Ser. No. 799,574
Term of patent 14 years
Int. Cl. D4—*04;* D7—*05*
U.S. Cl. D4—38



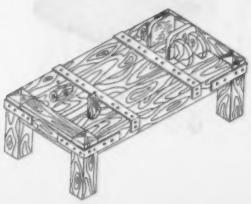
250,369
MODULAR DISPLAY CABINET
Bridget C. Ornatek, Glenview, Ill., assignor to Contempo Design Inc., Northfield, Ill.
Filed Dec. 16, 1977, Ser. No. 861,329
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—168



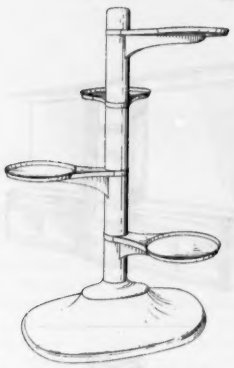
250,370
MODULAR DISPLAY CABINET
Bridget C. Ornatek, Glenview, Ill., assignor to Contempo Design Inc., Northfield, Ill.
Filed Dec. 16, 1977, Ser. No. 861,330
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—168



250,371
CARPENTER'S TABLE
Horace A. Hade, R.R. #2, Grabill, Ind. 46741
Filed Feb. 27, 1976, Ser. No. 661,942
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—4



250,372
STAND FOR POTTED PLANTS
Arpad Szabo, 5150 MacDonald Ave., Montreal, Quebec, and Ludovic Perl, 781-100th Ave., Chomedey, Laval, Quebec, both of Canada
Filed Jun. 1, 1977, Ser. No. 802,488
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—24



250,373
CHAIR
Alfred J. Prizlow, Bloomfield Hills, and Raymond A. Grosso, Troy, both of Mich., assignors to GF Business Equipment, Inc., Youngstown, Ohio
Filed Mar. 8, 1977, Ser. No. 775,651
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

250,374
CHAIR
Alfred J. Prizlow, Bloomfield Hills, and Raymond A. Grosso, Troy, both of Mich., assignors to GF Business Equipment, Inc., Youngstown, Ohio
Filed Mar. 8, 1977, Ser. No. 775,650
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

250,375
CHAIR
Larry L. Hughes, 2923 Winter St.; Don E. Lutz, 9314 Kress Rd., both of Fort Wayne, Ind. 46471, and Mark A. Hade, R.R. #1, Grabill, Ind. 46741
Filed Feb. 27, 1976, Ser. No. 661,940
The portion of the term of this patent subsequent to Feb. 21, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—73

250,376

HANGING SUPPORT FOR FLOWER POT

Maurice V. Schoenbrun, San Jose, Calif., assignor to Earth Fair, Inc., San Jose, Calif.

Filed Oct. 13, 1976, Ser. No. 732,003

Term of patent 14 years

Int. Cl. D6—*06*

U.S. Cl. D6—113

250,377

FIRE EXTINGUISHER HOUSING

Arthur R. Dooley, 211 Central Caldwood, Beaumont, Tex. 77707; Arthur R. Dooley, Jr., 2575 Ashley, Beaumont, Tex. 77702, and Donald E. Richert, 3340 Kipling Dr., Beaumont, Tex. 77706

Filed Apr. 15, 1977, Ser. No. 788,076

Term of patent 14 years

Int. Cl. D29—*01*

U.S. Cl. D6—127

250,378

UPHOLSTERED SCREEN

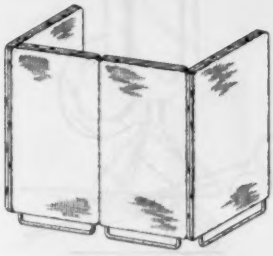
David Woods, Quakertown, Pa., assignor to Burlington Industries, Inc.

Division of Ser. No. 683,007, May 4, 1976. This application Jan. 13, 1978, Ser. No. 869,119

Term of patent 14 years

Int. Cl. D6—*99*

U.S. Cl. D6—139



250,379

COMBINED CUP, SAUCER AND PLATE STAND

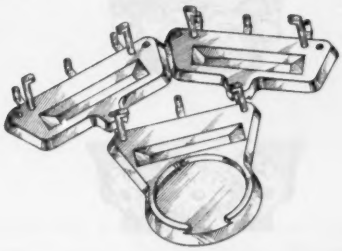
Charles Zahn, Jennison Rd., Milford, N.H. 03055

Filed Aug. 5, 1976, Ser. No. 711,860

Term of patent 14 years

Int. Cl. D20—*02*

U.S. Cl. D6—142



250,380

TABLE

Sandra R. Verdesca, and Joseph T. Verdesca, both of Dallas, Tex., assignors to Computer Roomers, Dallas, Tex.

Filed Oct. 14, 1976, Ser. No. 732,453

Term of patent 14 years

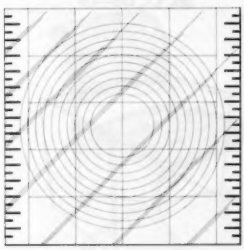
Int. Cl. D6—*03*

U.S. Cl. D6—177

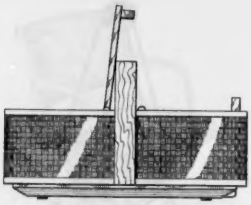
250,381
TUMBLER
James A. Lindell, 710 Americana Dr., Annapolis, Md. 21493
Filed Apr. 29, 1977, Ser. No. 792,491
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

250,382
BOWL OR SIMILAR ARTICLE
Frank J. Benes, and James L. Thrush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 487,456, Jul. 11, 1974, Pat. No. Des. 243,463. This application Jan. 5, 1976, Ser. No. 646,511
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—28

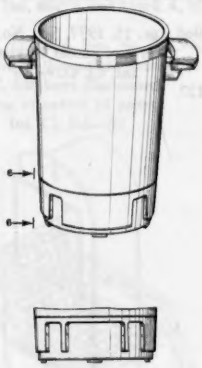
250,383
PASTRY SHEET OR THE LIKE
Jovanna Ceccarelli, P.O. Box 1564, F. D. R. Station, New York, N.Y. 10022
Filed Oct. 4, 1976, Ser. No. 729,309
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—41



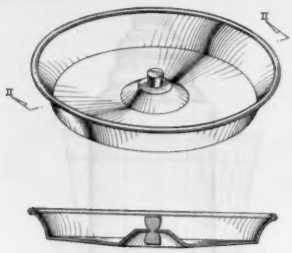
250,384
ELECTRICALLY HEATED BASKET FOR WARMING FOOD
Robert Dziekonski, Fort Lee, N.J., assignor to Salton, Inc., Bronx, N.Y.
Filed Aug. 11, 1976, Ser. No. 713,332
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—76



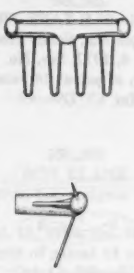
250,385
FRYER
Ron Babros, and Norm Minsky, both of West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 27, 1976, Ser. No. 754,488
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



250,386
COOKING POT LID
Eleanor K. Tuggy, 523 W. Junipero, Santa Barbara, Calif. 93105
Filed Sep. 20, 1976, Ser. No. 724,902
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131



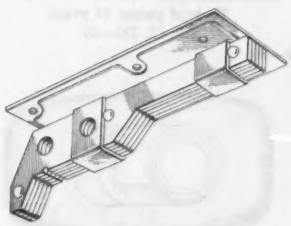
250,387
GARDENING IMPLEMENT
Josef Binder, Bayerwaldstrasse 18, 8391 Strasskirchen, Germany
Filed Nov. 22, 1976, Ser. No. 744,221
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—6



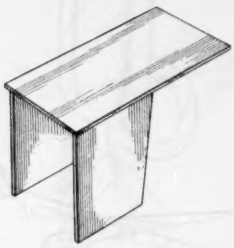
250,388
CUTTER HEAD FOR AN ICE AUGER
Uuno Rantanen, Paininpuuntie, 16, 18100 Heinola 10, Finland
Filed Nov. 24, 1976, Ser. No. 744,807
Term of patent 14 years
Int. Cl. D8—*01, 03*
U.S. Cl. D8—8

250,389
SCISSORS
Michael G. Vitetta, 311 Fenimore Rd., Mamaroneck, N.Y. 10543
Filed Feb. 24, 1977, Ser. No. 771,529
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

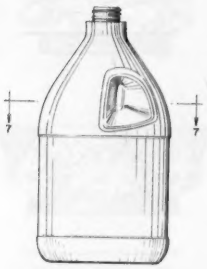
250,390
DEADBOLT LOCKING DEVICE
Allan Miller, 5 Shaw La., Irvington, and Florian Fischler, McKeoun Dr., Hopewell Junction, both of N.Y. 12533
Filed Sep. 21, 1976, Ser. No. 725,167
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—339



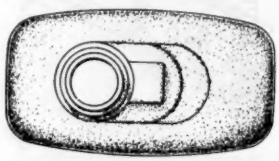
250,391
POST CAP
George E. France, 901 W. James St., Geneva, Ill. 60134
Continuation-in-part of Ser. No. 487,129, Jul. 10, 1974, Pat. No. D. 242,037. This application Oct. 22, 1976, Ser. No. 734,713
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



250,392
BOTTLE
Donald J. Leary, and Doyle J. Morgan, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 13, 1976, Ser. No. 749,932
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

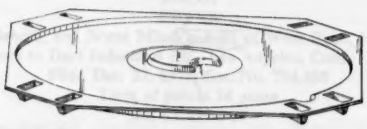


250,393
BOTTLE OR SIMILAR ARTICLE
Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation
Filed Jan. 27, 1977, Ser. No. 762,861
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

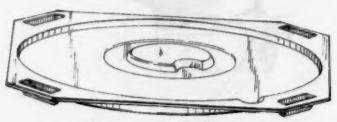


250,394
BOTTLE
Joseph M. Menius, 4302 Barth Dr., St. Louis, Mo. 63125
Filed Feb. 17, 1977, Ser. No. 769,668
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158

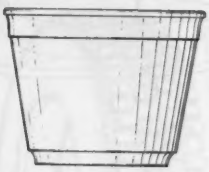
250,395
STACKABLE TAPE TRAY
Eric L. Weil, 6 CrabApple Rd., Sandy Hook, Conn. 06482
Filed Mar. 4, 1977, Ser. No. 774,244
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—187



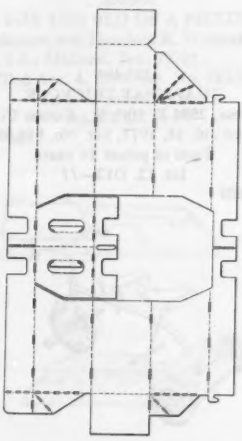
250,396
STACKABLE TAPE TRAY
Eric L. Weil, 6 CrabApple Rd., Sandy Hook, Conn. 06482
Filed Mar. 4, 1977, Ser. No. 774,448
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—187



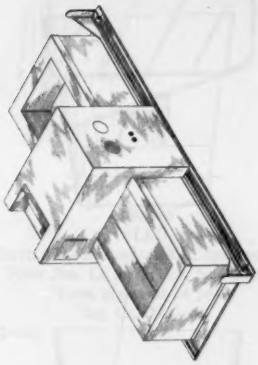
250,397
FOOD CONTAINER
Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 26, 1976, Ser. No. 718,650
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220



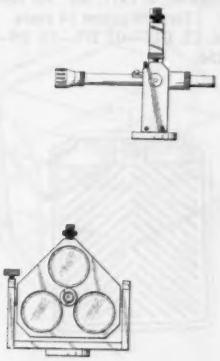
250,398
BOX BLANK
Jerry F. Wilson, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed Oct. 19, 1976, Ser. No. 733,784
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



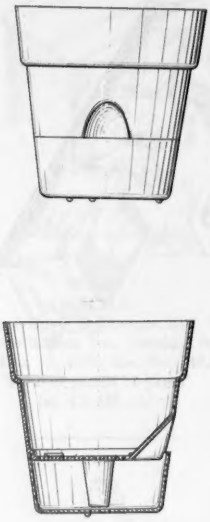
250,399
RADIATION MEASURER OR SIMILAR ARTICLE
Geo. L. Helgeson, Pleasanton, Calif., assignor to Helgeson Nuclear Services, Inc., Pleasanton, Calif.
Filed Mar. 11, 1976, Ser. No. 666,042
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—47



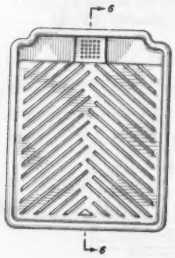
250,400
RETROPRISM HOLDER AND SIGHTING MECHANISM
Thomas N. Haidek, 11709 Century Dr., Oklahoma City, Okla. 73160
Filed Jan. 3, 1978, Ser. No. 866,245
Term of patent 14 years
Int. Cl. D10—*04; D16/06*
U.S. Cl. D10—103



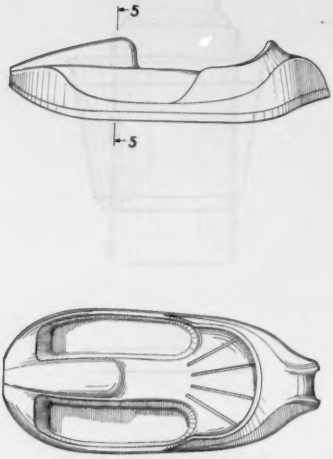
250,401
SELF-WATERING FLOWER POT
John E. O'Shea, 17220 Mayall St., Northridge, Calif. 91324, and James T. White, 16501 Knollword Dr., Granada Hills, Calif. 91344
Filed Nov. 16, 1977, Ser. No. 852,011
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



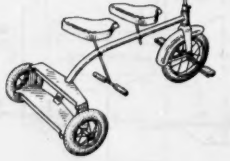
250,402
GARDENING TRAY
Ruth H. Connell, and Del G. Connell, both of 22915 Dolorosa St., Woodland Hills, Calif. 91367
Filed Dec. 8, 1977, Ser. No. 858,857
Term of patent 14 years
Int. Cl. D11—*02*; D7—*99*; D9—*03*
U.S. Cl. D11—156



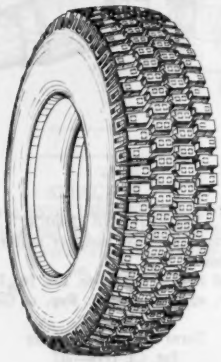
250,403
SHELL FOR SLED
Richard F. Ross, 103 Washington St., Mendon, Mass. 01756, assignor to American Zephyr Corporation, Intervale, N.H.
Filed Jun. 6, 1977, Ser. No. 804,110
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—10



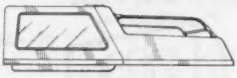
250,404
DUAL SEAT TRICYCLE
Wilma D. S. Reese, 2504 E. 10th St., Kansas City, Mo. 64127
Filed Jul. 18, 1977, Ser. No. 816,599
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—109



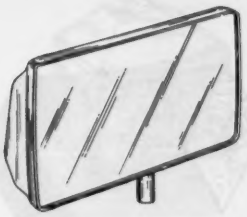
250,405
TIRE
Raimo Nyblom, Nokia, Finland, assignor to Oy Nokia AB, Helsinki, Finland
Filed Oct. 28, 1977, Ser. No. 846,602
Claims priority, application Finland, May 5, 1977, 77301
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



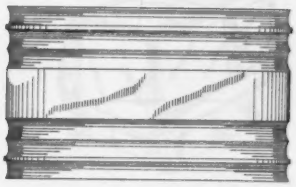
250,406
COVER FOR THE BED OF A PICKUP TRUCK
Robert J. Windecker, and Theodore R. Windecker, both of P.O. Box 6187 A.T.S., Midland, Tex. 79701
Filed Apr. 4, 1977, Ser. No. 783,970
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



250,407
REAR VIEW MIRROR
Richard D. Hutchinson, Jr., Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.
Filed May 16, 1977, Ser. No. 797,600
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

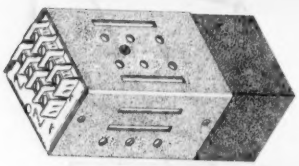


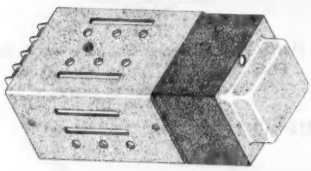
250,408
SLED
Joseph R. Hartt, 6352 S. Poplar Ct., Engelwood, Colo. 80110
Filed Jan. 12, 1977, Ser. No. 758,659
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D12—10



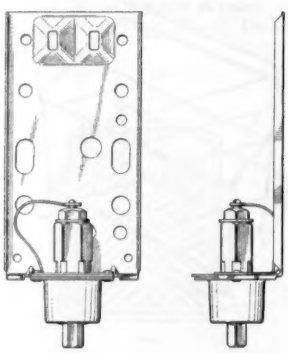
250,409
SERVING CART
Hans Quapp, Solingen, Fed. Rep. of Germany, assignor to Bremshey AG, Solingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 562,582, Mar. 27, 1975, abandoned. This application Apr. 29, 1976, Ser. No. 681,685
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29

250,410
MODULE FOR HIGH-POWER ELECTRIC CIRCUIT COMPONENTS
Robert Pintell, New City, N.Y., assignor to Interelectronics Corporation, Congers, N.Y.
Filed Jul. 14, 1976, Ser. No. 705,109
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—4

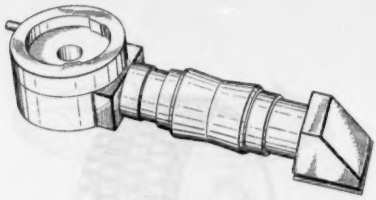




250,411
MOUNTED FLUID VALVE ASSEMBLY FOR DIESEL STARTING SYSTEMS
John W. Krueger, and John D. Krueger, both of Glenview, Ill., assignors to Phillips, Minneapolis, Minn.
Filed Feb. 22, 1978, Ser. No. 880,217
Term of patent 14 years
Int. Cl. 15—*01*
U.S. Cl. D15—05

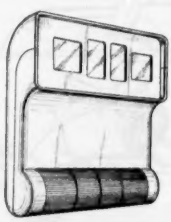


250,412
DRAWING ATTACHMENT FOR A MICROSCOPE
John T. Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 2, 1977, Ser. No. 773,725
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—57

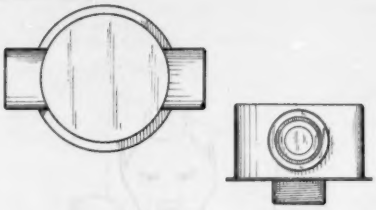


250,413
TELEPHONE INDEX
Hans Halm, Herne, Germany, assignor to Firma Niveau AG, Basel, Switzerland
Filed Feb. 4, 1977, Ser. No. 765,755
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 6610277
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

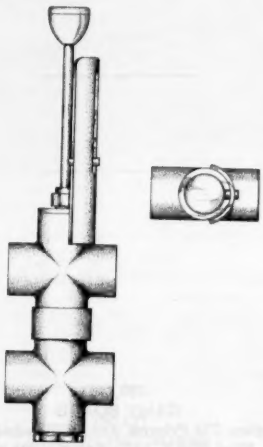
250,414
WALL CALENDAR
Hans Halm, Herne, Germany, assignor to Arlac-Werk Heiko Ippen, Hamburg, Germany
Filed Feb. 22, 1977, Ser. No. 770,403
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—25



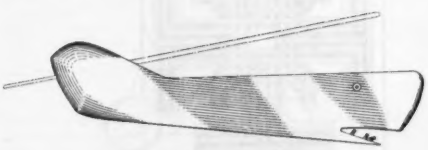
250,415
FILTER HEAD
Borje O. Rosaen, 4031 Thornoaks Dr., and Dale P. Fosdick, 3000 Hunting Valley Dr., both of Ann Arbor, Mich. 48104
Filed Jan. 13, 1977, Ser. No. 763,805
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



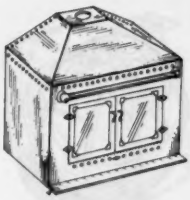
250,416
SELECTOR VALVE
Kenneth E. Price, 1534 Channelwood Dr., Whittier, Calif. 90601
Filed Jun. 20, 1977, Ser. No. 808,061
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



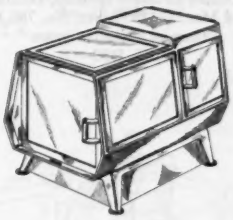
250,417
INCENSE HOLDER
Jack Preston, 2035 Jeffcott St., Fort Myers, Fla. 33901
Filed Nov. 7, 1977, Ser. No. 849,457
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D23—78



250,418
FIREPLACE
Duane E. Baker, Scranton, Iowa 51462
Filed May 26, 1977, Ser. No. 802,277
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



250,419
FIREPLACE STOVE
Arthur J. Luscombe, Dolliver, Iowa 50531
Filed Jun. 30, 1977, Ser. No. 811,999
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

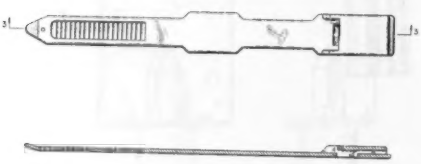


250,420
VENT
Bruce K. Ward, St. Louis Park, Minn., assignor to Diversified Insulation, Inc., Hamel, Minn.
Filed May 6, 1977, Ser. No. 794,639
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

250,421
DUSTING POWDER CONTAINER
Michael Reich, Mamaroneck, N.Y., assignor to New York Pencil Company, Inc., Long Island City, N.Y.
Filed Dec. 13, 1976, Ser. No. 749,929
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D28—80

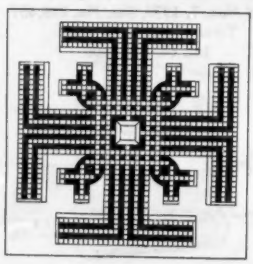
250,422
POULTRY DRINKING UNIT
Ronald I. Mallinson, Triangle, near Halifax, England, assignor to Mono-Flo Nipple Drinkers Limited, Halifax, England
Filed Mar. 22, 1977, Ser. No. 780,196
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

250,423
ANKLET IDENTIFICATION TAG FOR ANIMALS
Breckenridge T. Viets, Hyde Park, Vt., assignor to C. H. Dana Co., Inc.
Filed Mar. 7, 1977, Ser. No. 775,269
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



250,424
CHESS PIECE SET
Joseph Di Martino, 824 Fifth St., West Babylon, N.Y. 11704
Filed May 7, 1976, Ser. No. 684,468
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH

250,425
GAME BOARD
Lyall F. Hughes, 274 Princess Ave., Willowdale, Canada
Filed May 5, 1977, Ser. No. 793,897
Claims priority, application Canada, Dec. 20, 1976, 20127611
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

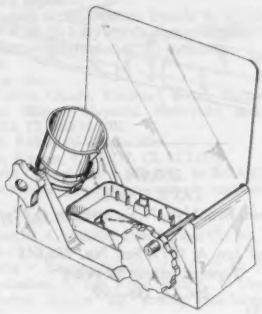


250,426

TOY MOLDING MACHINE

Fredric C. Behling, 41 Washington St., West Barrington, R.I. 02890, and Paul J. Sullivan, 300 Metacom Ave., Bristol, R.I. 02809

Filed Oct. 18, 1976, Ser. No. 733,467
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 S

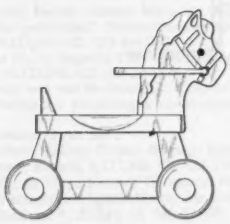


250,427

TOY RIDING HORSE

Walter P. Doe, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 9, 1976, Ser. No. 749,003
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AE

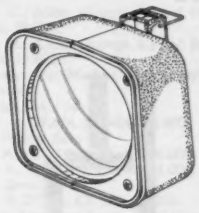


250,428

SPOTLIGHT

Lester H. Bennett, Los Alamitos, Calif., assignor to Bon-Aire Industries, Inc., Signal Hill, Calif.

Filed Apr. 12, 1977, Ser. No. 786,956
Term of patent 14 years
Int. Cl. D26—*04, 02*
U.S. Cl. D48—20 K

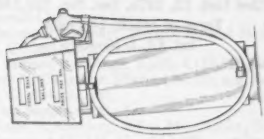


250,429

GASOLINE PUMP

Bradley L. Batson, Hebron; Alfred C. Evans; Robert J. Schiller, both of Simsbury, and Laird F. Covey, Easton, all of Conn., assignors to Veeder Industries Inc.

Filed Oct. 18, 1976, Ser. No. 733,122
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 A



250,430

ELECTRONIC CALCULATING MACHINE

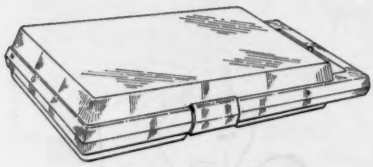
Seiichiro Nishiguchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1977, Ser. No. 804,456
Claims priority, application Japan, Dec. 8, 1976, 51-47982
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 B

250,431
SEGMENTED ALPHABET CHARACTER K
William E. Miles, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.
Division of Ser. No. 645,599, Dec. 31, 1975. This application Dec. 23, 1977, Ser. No. 863,763
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

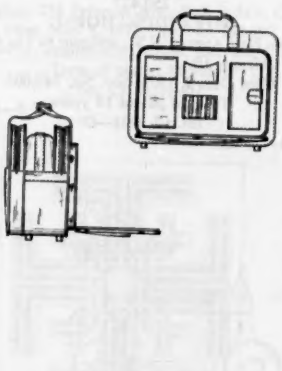
250,432
CANDLE OR SIMILAR ARTICLE
William M. Eklund, 4500 Madison SE., Kentwood, Mich. 49508
Filed Oct. 13, 1976, Ser. No. 731,537
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D73—1 R

250,433
COMBINED CARRYING AND STORAGE CASE FOR A SOCKET SET
Donald A. Malcolm, Roanoke Rapids, N.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Sep. 24, 1976, Ser. No. 726,705
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



250,434
TAPE RACK
Thomas R. Ekeland, Brooklyn, N.Y., assignor to Flynn Systems, Limited
Filed Jan. 4, 1977, Ser. No. 756,641
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D

250,435
CARRYING CASE
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed Jun. 15, 1977, Ser. No. 806,917
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF NOVEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.J. Sparks & Company: *See—*
Moore, Alvin C.; and Bern, Henry K., 4,127,040, Cl. 74-240.000.

A/S Akers Mek. Verksted: *See—*
Fladby, Tron-Halvard, 4,127,362, Cl. 417-53.000.

AB Volvo: *See—*
Thole, Ulf L., 4,127,182, Cl. 180-98.000.

Abbott, Ronald E.: *See—*
Smith, Vernon O.; and Abbott, Ronald E., 4,126,909, Cl. 14-71.300.

Abdulla, Riaz F., to Eli Lilly and Company. Method for the preparation of 3-phenyl-5-substituted-4(1H)-pyridones. 4,127,581, Cl. 546-250.000.

Abo, Masahiro: *See—*
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, 4,127,553, Cl. 260-33.20R.

Accord Mech. Kabushiki Kaisha: *See—*
Hirakawa, Kazusa, 4,127,737, Cl. 13-7.000.

Adam, Kenneth C.; and Easter, Finis C., to RCA Corporation. Overcurrent protection circuit for voltage regulator. 4,127,885, Cl. 361-18.000.

Adams, Don L.: *See—*
Tefft, Franklin A.; Adams, Don L.; and Cotton, Lou S., 4,127,245, Cl. 244-17.130.

Adams, Roberta V. Sewing thimble. 4,127,222, Cl. 223-101.000.

Adamski, Maximilian, Jr.; and Kuhn, John A., to Union Special Corporation. Suction device for sewing machines. 4,127,075, Cl. 112-122.000.

Addleman, Robert L., to Imperial Chemical Industries Limited. Process for fabricating biaxially oriented container of polyethylene terephthalate coated with a copolymer of vinylidene chloride. 4,127,633, Cl. 264-97.000.

Admiral Corporation: *See—*
Schwartz, Jack, 4,127,876, Cl. 358-194.000.

Ag-Met, Inc.: *See—*
Higgins, David L., 4,127,465, Cl. 204-228.000.

Agency of Industrial Science & Technology: *See—*
Ueda, Shigeru; Yokoyama, Shinichi; Nakata, Yoshinori; Hasegawa, Yoshihisa; Yoshida, Ryoichi; Maekawa, Yousuke; Yoshida, Yuji; and Makino, Kazuo, 4,127,151, Cl. 141-5.000.

AGFA-Gevaert N.V.: *See—*
Verhille, Karel E., 4,127,394, Cl. 55-15.000.

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Baden, Richard E., 4,127,283, Cl. 280-411.00R.

Akins, Robert J.; and Slivenko, Victor, to General Atomic Company. Socket and joint prostheses. 4,126,924, Cl. 29-423.000.

Aktiebolaget Bofors: *See—*
Jacobson, Gunnar; Jarnholt, Per-Erik; Lindholm, Erik H.; and Olsson, Olof B., 4,127,243, Cl. 244-3.210.

Aktiebolaget Electrolux: *See—*
Fahlvik, Hans A.; and Sandquist, Kurt E., 4,127,384, Cl. 422-109.000.

Alaspa, Allan A., to Motorola, Inc. Regulated constant current circuit. 4,127,783, Cl. 307-297.000.

Albertsen, Peter S., to Corning Glass Works. Concentric pipe coupling. 4,127,286, Cl. 285-41.000.

Albertson, Noel F.: *See—*
Wentland, Mark P.; and Albertson, Noel F., 4,127,577, Cl. 546-97.000.

Albright & Wilson Ltd.: *See—*
Williams, Thomas A., 4,127,640, Cl. 423-321.00S.

Aldcroft, Derek; Barby, Donald; Lovell, Anthony L.; and Quinn, James P., to Joseph Crosfield and Sons Limited. Process for the preparation of precipitated silicas having morphology similar to pyrogenic silicas. 4,127,641, Cl. 423-339.000.

Aldick, Willi; and Lotz, Alexander, to Damin Mineralien Gesellschaft mit beschrankter Haftung. Settling machine. 4,127,480, Cl. 209-457.000.

Alewelt, Wolfgang; Jacobs, Gunter; Margotte, Dieter; and Lux, Erich, to Bayer Aktiengesellschaft. Polycarbonates and a process for their preparation. 4,127,561, Cl. 528-199.000.

Alexander, John H., to Imperial Chemical Industries Limited. Cement compositions. 4,127,548, Cl. 260-29.2TN.

Alfenaar, Marinus; and van de Moesdijk, Cornelis G. M., to Stamicarbon, B.V. Process for preparing a metal electrode. 4,127,468, Cl. 204-284.000.

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Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, 4,127,388, Cl. 422-258.000.

Allan, George G., to Weyerhaeuser Company. Process for the partial substitution of ammonium lignosulfonate for phenol in phenolic-aldehyde resin adhesives. 4,127,544, Cl. 260-17.500.

Allen, George A.: *See—*
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Churchill, Charles M.; Allen, George A.; and Stadalsky, John F., 4,127,550, Cl. 260-29.60E.

Allen, Joseph C., to Texaco Inc. Method for recovering hydrocarbons. 4,127,171, Cl. 166-260.000.

Allergan Pharmaceuticals, Inc.: *See—*
Leopold, Irving H., 4,127,674, Cl. 424-324.000.

Allied Chemical Corporation: *See—*
Phillips, Benjamin A., 4,127,009, Cl. 62-101.000.
Phillips, Benjamin A., 4,127,010, Cl. 62-101.000.

Allied Products Corp.: *See—*
Husky, Glover A., 4,127,061, Cl. 100-100.000.

Almgren, Robert E., to American Loose Leaf Corp. Movable hinge binder. 4,127,340, Cl. 402-44.000.

Aluma-Form Inc.: *See—*
Farmer, Marion R., 4,127,739, Cl. 174-45.00R.

Alza Corporation: *See—*
Wong, Patrick S. L.; Smith, Kelly L.; and Michaels, Alan S., 4,127,127, Cl. 128-260.000.

Amano, Haruyuki; and Nakano, Akira, to Kao Soap Co., Ltd. Method of making ice cream. 4,127,679, Cl. 426-565.000.

Amato, Carmelo J.: *See—*
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Amemiya, Akira: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,127,503, Cl. 252-429.00R.

Ameri, Seadet: *See—*
Konya, Calvin J.; Chase, Robert W.; and Ameri, Seadet, 4,127,068, Cl. 102-23.000.

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Berst, Albert H.; Kline, Richard L.; Medcalf, William A.; Onnen, James H.; and Schupp, Philipp P., 4,127,621, Cl. 261-118.000.
McLarty, Tom E., 4,127,183, Cl. 181-224.000.
O'Nan, Alex, Jr.; and Goldsmith, Jesse M., 4,127,397, Cl. 55-479.000.

American Cyanamid Company: *See—*
Bernstein, Seymour; Lenhard, Robert H.; and Heller, Milton D., 4,127,602, Cl. 260-506.000.
Kaizerman, Samuel; and Singh, Ajaib, 4,127,542, Cl. 260-18.0PF.
Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., 4,127,719, Cl. 544-242.000.

American Hospital Supply Corp.: *See—*
Sherlock, Hugh P.; Golderg, Allan M.; Ciupke, Werner W.; and Brody, George, 4,127,112, Cl. 128-2.00S.

American Loose Leaf Corp.: *See—*
Almgren, Robert E., 4,127,340, Cl. 402-44.000.

American Optical Corporation: *See—*
Cuffe, Patricia M.; LeBoeuf, Albert R.; and Travnicek, Edward A., 4,127,638, Cl. 264-331.000.
Laurin, Bernard L., 4,127,682, Cl. 427-164.000.
Laurin, Bernard L., 4,127,697, Cl. 428-412.000.

Ammeraal, Thomas C. M. Apparatus for manufacturing the cups of a brassiere from a fabric of synthetic material. 4,127,374, Cl. 425-289.000.

AMP Incorporated: *See—*
Fleischhacker, James E.; Wasserlein, Henry G., Jr.; and Kloth, James A., deceased, 4,127,312, Cl. 339-99.00R.
Forney, Edgar W., Jr.; Johnson, Tore R.; and O'Keefe, Michael F., 4,127,319, Cl. 350-96.200.
Mixon, James L., Jr., 4,127,354, Cl. 403-279.000.

Anders, Dietmar; Brand, Wilhelm; and Dienst, Manfred, to Hermann Berstorff Maschinenbau GmbH. Extruder and twin roller calendering plant. 4,127,373, Cl. 425-192.00R.

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Mohnach, Michael G.; and Harbison, William H., 4,126,911, Cl. 15-250.420.

Anderson, Elmer A.; Kim, Leo; and Tang, Sunny C., to Shell Oil Company. Selective hydrogenation of olefinic impurities in epichlorohydrin. 4,127,594, Cl. 260-348.370.

Anderson, Ernest L. Pivotal sliding sash window. 4,126,964, Cl. 49-183.000.

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Frers, Gerd; Nickel, Hans; and Henning, Klaus, 4,127,098, Cl. 123-185.0BA.

Andres, James R. Parachute air drop load impact reducing system. 4,127,246, Cl. 244-138.00R.
Angelosanto, Donald J.; and Kendall, James W., to Huck Manufacturing Company. Lock spindle blind fastener for single action application. 4,127,345, Cl. 403-388.000.
Anger, Anton, to Anton Anger Maschinenbau GmbH. Method of producing undercut tubular synthetic plastic articles. 4,127,632, Cl. 264-94.000.
Anic, S.p.A.: *See*—
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Guiliani, Giampaolo, 4,127,617, Cl. 260-878.00R.
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Heaney, James J., 4,127,188, Cl. 206-453.000.
Heaney, James J., 4,127,765, Cl. 219-218.000.
Anton Anger Maschinenbau GmbH: *See*—
Anger, Anton, 4,127,632, Cl. 264-94.000.
Antonious, Anthony J. Shoe closure assembly and shawl. 4,126,951, Cl. 36-54.000.
Anzai, Nobuo; and Satoh, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Position sensor device for elevator car. 4,127,843, Cl. 340-21.000.
AO:s Metall & Mek. Verkstad AB: *See*—
Ohlson, Carl-Eric, 4,127,775, Cl. 250-490.000.
Applegate, Lee C. Torso-board straps and method of using the same. 4,127,120, Cl. 128-134.000.
Applied Photophysics Limited: *See*—
West, Michael A., 4,127,773, Cl. 250-461.00R.
Arai, Tadashi. Process for producing antibiotics mimosamycin and chlorocarcins A, B and C. 4,127,446, Cl. 195-80.00R.
Arai, Takashi: *See*—
Kato, Yasuo; Kakiuchi, Motoo; Arai, Takashi; and Okawa, Kunio, 4,127,841, Cl. 338-128.000.
Ardac, Inc.: *See*—
Gorgone, Robert L.; Iannadrea, Gerald; and Kovach, Alan J., 4,127,328, Cl. 356-71.000.
Arendt, Henry P., to Otis Engineering Corporation. Lubricator for moving well equipment through flow conductor. 4,127,167, Cl. 166-85.000.
Arisaka, Katsuharu; Watanabe, Kazu; and Sasazima, Kunihiko, to Daicel Ltd. Process for preparing hollow fiber having selective gas permeability. 4,127,625, Cl. 264-28.000.
Arndt, Kenneth E.; Otto, Lonnie E., Jr.; and Siekmeier, David A., to Lindsay Manufacturing Company. Water drive system for a center pivot irrigation unit or the like. 4,127,181, Cl. 180-14.00R.
Arnold, Carroll H., to Wain-Roy, Inc. Tool connecting system. 4,127,203, Cl. 214-145.00A.
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Guiliani, Giampaolo, to Anic, S.p.A. Shock-resistant resin and method for their preparation. 4,127,617, Cl. 260-878.00R.
Asahi Glass Company Ltd.: *See*—
Yamabe, Masaaki; Munekata, Seiji; Sugaya, Yoshio; and Jitsugiri, Yukio, 4,127,731, Cl. 560-192.000.
Asano, Masuyuki; and Omuro, Shojiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Electromagnetic damping mechanism for force motor. 4,127,889, Cl. 361-159.000.
Asbeck, Adolf: *See*—
Heyden, Rudi; Eckelt, Michael; Asbeck, Adolf; Hoffmeister, Jurgen; and Schmadel, Edmund, 4,127,512, Cl. 252-544.000.
Asea AB: *See*—
Spicar, Erich; and Yngvesson, Hans, 4,127,276, Cl. 277-188.00R.
Ashland Oil, Inc.: *See*—
Gardikes, John J.; and Toeniskoetter, Richard H., 4,127,157, Cl. 164-12.000.
Small, Robert J., 4,127,611, Cl. 260-583.00B.
Asselman, George A. A.; Fokker, Herman; and Meijer, Roelf J., to U.S. Philips Corporation. Hot-gas engine with protected heat reservoir. 4,126,995, Cl. 60-524.000.
Associated Mills, Inc.: *See*—
Peterson, Samuel F., Jr., 4,127,117, Cl. 128-66.000.
Association des Ouvriers en Instruments de Precision: *See*—
Prudhon, Lucien P. E.; and Charil, Jean P. G., 4,127,750, Cl. 179-170.00R.
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., to Hoffmann-La Roche Inc. Compositions having antibiotic properties. 4,127,649, Cl. 424-177.000.
Atlantic Richfield Company: *See*—
Chambers, Robert R., 4,127,425, Cl. 136-89.0PC.
Atoji, Nobuhisa; Naono, Hiroyuki; Yamamoto, Hiroshi; and Ibaraki, Satoru, to Matsushita Electric Industrial Co., Ltd. Microphone capable of cancelling mechanical generated noise. 4,127,749, Cl. 179-110.00A.
Auding, Hans: *See*—
Kostlin, Heiner; Jost, Rudiger; and Auding, Hans, 4,127,789, Cl. 313-112.000.
Auinger, Herbert, to Siemens Aktiengesellschaft. Changeable pole three phase winding. 4,127,787, Cl. 310-184.000.
Aumiller, James H.; and Becker, Judith F. W., to Du Pont de Nemours, E. I., and Company. Electrically conductive adhesive. 4,127,699, Cl. 428-461.000.
Austral-Erwin Engineering Co.: *See*—
Erwin, Ransome W., 4,127,164, Cl. 165-133.000.
Auto Specialties Manufacturing Company: *See*—
Potter, Robert H., 4,127,343, Cl. 403-285.000.
Automobiles Peugeot: *See*—
Etienne, Michel, 4,127,803, Cl. 320-2.000.
Avco Corporation: *See*—
DeBolt, Harold E.; and Henze, Thomas W., 4,127,659, Cl. 427-249.000.
Awata, Mitsuru: *See*—
Uchida, Mitsuo; Fushiki, Takeshi; and Awata, Mitsuru, 4,127,628, Cl. 264-42.000.
Aymeloglu, Simeon: *See*—
Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, 4,127,742, Cl. 179-18.0FC.
Azzerri, Nazzareno; and Tamba, Alberto, to Centro Sperimentale Metallurgico S.p.A. Method for pretreating surfaces of steel parts for electroplating with organic or inorganic coatings. 4,127,450, Cl. 204-29.000.
Baader, Helmut, to Interroll Fordertechnik GmbH & Co. K.G. Arrangement for synchronizing an information reading device with the speed of an information medium. 4,127,770, Cl. 235-474.000.
Babcock, Thomas C.; Ellis, Theron LaR.; and Majka, Henry C., to International Business Machines Corporation. Adhesion promoter for additively plated printed circuit boards. 4,127,438, Cl. 156-666.000.
Baccei, Louis J.: *See*—
Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., 4,127,719, Cl. 544-242.000.
Backhaus, Wilhelm: *See*—
Staffe, Adolf; Lehment, Klaus-Friedrich; and Backhaus, Wilhelm, 4,127,735, Cl. 568-726.000.
Baden, Richard E., to Agricot Company, Inc. Multiple drill hitch assembly. 4,127,283, Cl. 280-411.00R.
Baird, William C., Jr.; Bearden, Roby, Jr.; and Ledford, Thomas H., to Exxon Research & Engineering Company. Hydroconversion with group IA, IIA metal compounds. 4,127,470, Cl. 208-58.000.
Bakalowits, Friedhelm; and Zalloni, Carl, to E. Bakalowits Sohne Gesellschaft m.b.H. Lighted element for decoration. 4,127,892, Cl. 362-32.000.
Baker, Arthur L. Wood burning stove. 4,127,100, Cl. 126-110.00B.
Baker, Robert R., to Ford Motor Company. Crack protection method. 4,127,684, Cl. 427-287.000.
Baker, William H.; and Wall, Frederick. Vacuum filter for swimming pools. 4,127,485, Cl. 210-169.000.
Baliguet, Michel P., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Self-powered system for measuring rotation speeds. 4,127,812, Cl. 324-174.000.
Ball, Orvin E.: *See*—
Anderson, Gordon K.; and Ball, Orvin E., 4,126,933, Cl. 29-598.000.
Bamburg, Robert A.; Floyd, Roger M.; and Duncan, Farris N., to Olinkraft, Inc. Bulk container with hinged locking top. 4,127,230, Cl. 229-45.00R.
Barbagli, Rino: *See*—
Grattapaglia, Giorgio; and Barbagli, Rino, 4,126,993, Cl. 60-329.000.
Barby, Donald: *See*—
Aldcroft, Derek; Barby, Donald; Lovell, Anthony L.; and Quinn, James P., 4,127,641, Cl. 423-339.000.
Barker, Jeffrey G.: *See*—
Ratcliffe, John F.; and Barker, Jeffrey G., 4,127,376, Cl. 425-380.000.
Barkman, Lars O., to Edet Aktiebolag. Process for purifying waste water obtained by a papermaking process. 4,127,440, Cl. 162-190.000.
Barlow, Gordon A.; and Disko, Harry, to Marvin Glass & Associates. Articulated doll. 4,126,961, Cl. 46-119.000.
Barlow, Peter, to James Neill Holdings Limited. Devices for use in re-sharpening fluted cutting tools and the like. 4,126,967, Cl. 51-219.00R.
Barnes, Dale R. Boat theft detector. 4,127,031, Cl. 73-204.0FR.
Barnette, Luverne H.: *See*—
Liang, Charles C.; Joshi, Ashok V.; and Barnette, Luverne H., 4,127,708, Cl. 429-191.000.
Barry, James D., to United States of America, Air Force. Optimized mode-locked, frequency doubled laser. 4,127,827, Cl. 331-94.50C.
Barry, Leonard D. Engine. 4,127,094, Cl. 123-229.000.
Bartholomay, William G.: *See*—
Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, 4,127,742, Cl. 179-18.0FC.
Barton, Daymon G.: *See*—
Preston, Marvin W.; and Barton, Daymon G., 4,127,852, Cl. 340-171.00R.
BASF Aktiengesellschaft: *See*—
Kohl, Lambert; Schneider, Richard; and Uhl, Karl, 4,127,882, Cl. 360-98.000.
Schulz, Bernhard; Grassner, Hans; Jaeger, Peter; and Nohe, Heinz, 4,127,455, Cl. 204-78.000.
BASF Wyandotte Corporation: *See*—
Krumpelt, Michael; and Hirozawa, Stanley T., 4,127,457, Cl. 204-98.000.
Newkirk, David D.; Thir, Basil; and Login, Robert B., 4,127,490, Cl. 252-8.900.
Bateman, Mark E.; and Palmer, Jeffrey T., to Standard Oil Company. Paper sizing process. 4,127,418, Cl. 106-213.000.
Battafarano, James D., to Wean United, Inc. Pipe detecting arrangement for an hydrostatic pipe testing apparatus. 4,127,026, Cl. 73-49.500.

Battelle-Institute e.V.: *See*—
Fischer, Dieter, 4,127,898, Cl. 365-146.000.

Bauer, Ewald; and Kreuzer, Martin, to Rosenthal Technik AG. Arrangement for elastically clamping glass fibre rods. 4,127,741, Cl. 174-189.000.

Baugh, Hollis A.: *See*—
Hanson, Harry R.; Baugh, Hollis A.; Childers, Thomas W.; and Greer, James B., 4,127,168, Cl. 166-123.000.

Baumann, Emil, to Contraves AG. Collapsible loading ramp or the like. 4,127,201, Cl. 214-85.000.

Baxter Travenol Laboratories, Inc.: *See*—
Fowles, Thomas A.; and Winchell, David A., 4,127,208, Cl. 215-253.000.
Khoja, Mirza A.; Gutierrez, Louis F.; and Perone, John T., 4,127,231, Cl. 233-1.00R.

Bay, Marvon W.; and Di Marco, Joel E. Collapsible frame with hanging net ball arresting apparatus. 4,127,267, Cl. 273-26.00A.

Bayer Aktiengesellschaft: *See*—
Alewelt, Wolfgang; Jacobs, Gunter; Margotte, Dieter; and Lux, Erich, 4,127,561, Cl. 528-199.000.
Colln, Reimer; and Lurssen, Klaus, 4,127,401, Cl. 71-76.000.
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,127,653, Cl. 424-200.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,127,652, Cl. 424-200.000.
Mohring, Edgar; Wagner, Kuno; and Muller, Hanns P., 4,127,599, Cl. 260-453.0AB.
Schmidt, Thomas; Kramer, Wolfgang; and Kranz, Eckart, 4,127,728, Cl. 560-124.000.
Staffe, Adolf; Lehment, Klaus-Friedrich; and Backhaus, Wilhelm, 4,127,735, Cl. 568-726.000.
Timmler, Helmut; Draber, Wilfried; and Eue, Ludwig, 4,127,404, Cl. 71-90.000.
Wollweber, Hartmund; Kolling, Heinrich; and Thomas, Herbert, 4,127,670, Cl. 424-300.000.

Bayer, Hans. Fish bait trolling harness and method. 4,126,956, Cl. 43-4.500.

BBC Brown, Boveri & Company, Limited: *See*—
Klein, Hans P.; and Menth, Anton, 4,127,511, Cl. 252-518.000.

Bearden, Roby, Jr.: *See*—
Baird, William C., Jr.; Bearden, Roby, Jr.; and Ledford, Thomas H., 4,127,470, Cl. 208-58.000.

Beaton, John M.; Huber, Joel E.; Padilla, Amphlett G.; and Breuer, Max E., to Upjohn Company, The. Non-aromatic oxygenated strong acid dehydration of 9α-hydroxyandrostenediones. 4,127,596, Cl. 260-397.300.

Bechtel International Corp.: *See*—
Reti, George R., 4,127,163, Cl. 165-61.000.

Becker, Judith F. W.: *See*—
Aumiller, James H.; and Becker, Judith F. W., 4,127,699, Cl. 428-461.000.

Becker, Willi: *See*—
Wirz, Arno; and Becker, Willi, 4,127,265, Cl. 271-260.000.

Beckman Instruments, Inc.: *See*—
Frankland, Roger A., 4,127,794, Cl. 315-169.00R.

Becton, Dickinson & Company: *See*—
Hurst, Philip F.; and Derry, Jasper, 4,127,217, Cl. 221-94.000.

Beecham Group Limited: *See*—
Fosker, George R.; and Davies, William, 4,127,570, Cl. 260-239.100.

Beelitz, Howard R.; and Preslar, Donald R., to RCA Corporation. Electrical circuit for multiplexing and dividing different bands or frequencies. 4,127,820, Cl. 325-459.000.

Beelitz, Howard R.; and Preslar, Donald R., to RCA Corporation. Integrated circuit mesa bipolar device on insulating substrate incorporating Schottky barrier contact. 4,127,860, Cl. 357-15.000.

Beer, Rio. Machine for treating the internal surfaces of bowl-shaped bodies. 4,126,910, Cl. 15-56.000.

Behrenz, Wolfgang: *See*—
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,127,653, Cl. 424-200.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,127,652, Cl. 424-200.000.

Beiersdorf Aktiengesellschaft: *See*—
Klier, Manfred; Hoppe, Udo; and Schritt, Wolfgang, 4,127,672, Cl. 424-311.000.

Bell, Allan D., Jr., to Dektor Counterintelligence & Security, Inc. Transmitter detecting apparatus. 4,127,817, Cl. 325-364.000.

Bell & Howell Company: *See*—
Erikson, Rolf B., 4,127,194, Cl. 209-578.000.

Bell, James A.; Higgins, Robert B.; Mason, Donald G.; Weaver, John C.; and Wood, Marvin E., to Ecodyne Corporation. Method and apparatus for separating solids from liquids. 4,127,488, Cl. 210-519.000.

Bell, Malcolm R.: *See*—
Gelotte, Karl O.; Zalay, Andrew W.; and Bell, Malcolm R., 4,127,583, Cl. 546-340.000.

Bell Telephone Laboratories, Incorporated: *See*—
Bishop, John D.; Clarke, Patrick W.; and Schatz, William J., 4,127,894, Cl. 363-56.000.
Heller, Adam; and Miller, Barry, 4,127,449, Cl. 204-2.100.
Ilegems, Marc; Koszi, Louis A.; and Schwartz, Bertram, 4,127,862, Cl. 357-30.000.
Li, Tingye, 4,127,320, Cl. 350-96.130.
Rhines, Warren J.; and Smith, Arnold R., 4,126,935, Cl. 29-628.000.

Bellis, Harold E., to Du Pont de Nemours, E. I., and Company. Method for preparing polyether glycols. 4,127,513, Cl. 528-413.000.

Ben-Lea, Yehuda. Holder for books, music sheets, or other sheet-containing articles. 4,127,253, Cl. 248-453.000.

Bendix Corporation, The: *See*—
Busch, Garland E., 4,127,234, Cl. 239-558.000.
Cramer, Robert L., 4,127,129, Cl. 128-142.200.

Bennett, Robert McK., Jr., to Motorola, Inc. Sampling filter-detector. 4,127,824, Cl. 328-138.000.

Bentzen-Bilkvist, Ib, to Dundee Cement Company. Aerating barge unloading system. 4,127,307, Cl. 302-23.000.

Berger, Bernd; Thies, Helmut; Mucke, Gerd; and Neuschutz, Eberhard, to Betriebsforschungsinstitut Vdeh Institut fur Angewandte Forschung GmbH. Arrangement for measuring stress distribution over the width of flexible strip, more particularly during cold rolling of steel strip. 4,127,027, Cl. 73-144.000.

Berman, Mark H. Heat absorbing window. 4,127,102, Cl. 126-270.000.

Bern, Henry K.: *See*—
Moore, Alvin C.; and Bern, Henry K., 4,127,040, Cl. 74-240.000.

Bernstein, Jack: *See*—
Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold R., 4,127,715, Cl. 542-404.000.

Bernstein, Seymour; Lenhard, Robert H.; and Heller, Milton D., to American Cyanamid Company. Methyl substituted hydroxynaphthalenesulfonic acid ureides and salts as complement inhibitors. 4,127,602, Cl. 260-506.000.

Bersin, Richard L.; Junkin, James H.; and Reichelderfer, Richard F., to Dionex Corporation. Process for etching SiO_2 utilizing HF vapor and an organic catalyst. 4,127,437, Cl. 156-635.000.

Berst, Albert H.; Kline, Richard L.; Medcalf, William A.; Onnen, James H.; and Schupp, Philipp P., to American Air Filter Company, Inc. Quenching device. 4,127,621, Cl. 261-118.000.

Bertone, Gregory A., to Mine Safety Appliances Company. Battery voltage regulating and condition indicating circuit for measuring instruments. 4,127,024, Cl. 73-27.00R.

Berwick, Martin A.: *See*—
Rule, Norman G.; Berwick, Martin A.; and Contois, Lawrence E., 4,127,412, Cl. 96-1.0PC.

Betriebsforschungsinstitut Vdeh Institut fur Angewandte Forschung GmbH: *See*—
Berger, Bernd; Thies, Helmut; Mucke, Gerd; and Neuschutz, Eberhard, 4,127,027, Cl. 73-144.000.

Beug, Dennis L.: *See*—
Coffield, George G., Jr.; and Beug, Dennis L., 4,126,955, Cl. 42-78.000.

Bezemer, Jan A.; and Tromp, Herman R. C., to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Band pass filter. 4,127,833, Cl. 333-72.000.

Bialkowski, Gunter, to Siemens Aktiengesellschaft. Vacuum switch tube. 4,127,755, Cl. 200-144.00B.

Bickel, Gary G. Vehicle-dock latching apparatus. 4,127,856, Cl. 340-687.000.

Bidston, William T.; and Blackie, Paul A., to Dunlop Limited. Antistatic footwear. 4,127,552, Cl. 260-31.80R.

Bieler, Anne C.; and Howe, Milton A., Jr., to W. R. Grace & Co. Sealed cross-linked thermoplastic sheets. 4,127,688, Cl. 428-36.000.

Binder, Johann, to Siemens Aktiengesellschaft. Method for automatic adjustment. 4,127,777, Cl. 250-548.000.

Bird, Forrest M., to Minnesota Mining and Manufacturing Company. Ventilator and method. 4,127,123, Cl. 128-145.800.

Birkenbach, Eugen J.: *See*—
Heersink, Evert J.; Birkenbach, Eugen J.; Brown, Daniel M.; and Schroeder, Thomas E., 4,127,179, Cl. 172-565.000.

Bishop, John D.; Clarke, Patrick W.; and Schatz, William J., to Bell Telephone Laboratories, Incorporated. Converter protection circuit operative to limit and counteract transformer saturation. 4,127,894, Cl. 363-56.000.

Bishop, John W. H., to Ibex Inking Systems, Inc. Business machine inking device and method of inking business machines. 4,127,337, Cl. 400-202.400.

Blackie, Paul A.: *See*—
Bidston, William T.; and Blackie, Paul A., 4,127,552, Cl. 260-31.80R.

Blair, Calvin B. Subsoil tillage tooth. 4,127,073, Cl. 111-7.000.

Blair, Calvin B. Earth working attachment. 4,127,178, Cl. 172-198.000.

Blair, Calvin B. Expanding camper arrangement. 4,127,299, Cl. 296-23.0MC.

Bleha, Miroslav; and Plichta, Zdenek, to Ceskoslovenska Akademie ved. Monomers and polymers containing the reactive aromatic system and method for their preparation. 4,127,732, Cl. 560-221.000.

Blessing, Gerald V.: *See*—
Warren, Jeffrey M.; and Blessing, Gerald V., 4,127,033, Cl. 73-622.000.

Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V. Method of preparing methacrylic acid. 4,127,603, Cl. 562-533.000.

Blomley, Peter F., to Motorola, Inc. Linear frequency discriminator. 4,127,825, Cl. 329-103.000.

Blucher, Joseph T.; Crosby, Stephen R.; and Stephens, Dennis W., to Wallace Murray Corporation. Band saw machine. 4,127,045, Cl. 83-796.000.

Blurton, Keith F.; and Sedlak, John M., to Energetics Science, Inc.

Device for the detection and measurement of noxious gases. 4,127,462, Cl. 204-195.00R.
Boeing Company, The: *See—*
Boone, Jimmie H.; and Simpson, Robert D., 4,127,248, Cl. 244-180.000.
Lambregts, Antonius A., 4,127,249, Cl. 244-191.000.
Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, 4,127,451, Cl. 204-38.00A.
Turner, Bernus G., 4,127,144, Cl. 137-596.000.
Bogert, David L.; and New, Jimmie D., to Xerox Corporation. Impact printer with cartridge print wheel. 4,127,335, Cl. 400-144.200.
Bohler, Pierre: *See—*
Hottinger, Conrad; Ruppen, Bruno; Bohler, Pierre; and Singenberger, Emil, 4,127,055, Cl. 89-33.00D.
Bohner & Kohle GmbH & Co.: *See—*
Bosch, Walter, 4,127,020, Cl. 72-68.000.
Bosch, Walter, 4,127,022, Cl. 72-367.000.
Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,127,074, Cl. 111-85.000.
Bonvetti, Domenico R., III. Simulated golf game. 4,127,273, Cl. 273-245.000.
Boone, Jimmie H.; and Simpson, Robert D., to Boeing Company, The. Adaptive energy management for vertical speed control of an aircraft. 4,127,248, Cl. 244-180.000.
Borchart, Hans, to Wickmann Werke Aktiengesellschaft. Indicating device for fuse-links more particularly miniature fuse-links. 4,127,837, Cl. 337-265.000.
Bos Kalis Westminster Group N.V.: *See—*
de Vries, Huibert, 4,127,288, Cl. 285-136.000.
Bosch, Walter, to Bohner & Kohle GmbH & Co. Method of manufacturing solid wheel rims. 4,127,020, Cl. 72-68.000.
Bosch, Walter, to Bohner & Kohle GmbH & Co. Method of manufacturing solid wheel rims. 4,127,022, Cl. 72-367.000.
Bostian, Logan C., to Virginia Chemicals Inc. Production of sodium dithionite from sulfur dioxide, sodium formate, and sodium carbonate with minimum quantities of water and methanol. 4,127,642, Cl. 423-515.000.
Boswell, Donald D.: *See—*
Jacobson, Alexander D.; Grinberg, Jan; Sprotbery, Donald E.; and Boswell, Donald D., 4,127,322, Cl. 353-31.000.
Boucher, Ralph E., to Melrose Displays, Inc. Adjustable display fixture. 4,127,196, Cl. 211-207.000.
Bouffard, Lloyd J. Universal traffic control marker. 4,127,346, Cl. 404-15.000.
Boyle, John T. A., to John Wyeth & Brother Limited. Thiazoline derivatives. 4,127,660, Cl. 424-249.000.
Boynton, Kenneth G., to Hollis Engineering, Inc. Jig for mass soldering system. 4,127,692, Cl. 428-137.000.
Bozzay, Laszlo: *See—*
Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, 4,127,388, Cl. 422-258.000.
Brancaccio, Aldo: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Guiliani, Giampaolo, 4,127,617, Cl. 260-878.00R.
Brand, Derek A.: *See—*
Schlau, Floyd E.; Disko, Harry; and Brand, Derek A., 4,127,377, Cl. 425-385.000.
Brand, Wayne R. Vehicle door opening apparatus. 4,127,018, Cl. 70-282.000.
Brand, Wilhelm: *See—*
Anders, Dietmar; Brand, Wilhelm; and Dienst, Manfred, 4,127,373, Cl. 425-192.00R.
Herbert, Adolf; Brand, Wilhelm; and Dienst, Manfred, 4,127,331, Cl. 366-83.000.
Brandt, James R. Burglar-proof screening. 4,127,156, Cl. 160-179.000.
Braver, Alvin S., to International Environmental Mfg. Corp. Modular air conditioning apparatus. 4,127,162, Cl. 165-50.000.
Braye, Emile, to Parcor. Process for the preparation of thieno-pyridine derivatives. 4,127,580, Cl. 546-114.000.
Breaux, Onezime P., to United States of America, Air Force. Electrostatic energy conversion system. 4,127,804, Cl. 322-2.00A.
Brenner, Douglas: *See—*
Lundberg, Robert D.; Phillips, Robert R.; Makowski, Henry S.; and Brenner, Douglas, 4,127,546, Cl. 260-27.0BB.
Bretscher, Max, to Carba S.A. Apparatus for the automatic measurement of the arterial pressure of a patient. 4,127,114, Cl. 128-2.05N.
Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. 3-heterothiomethyl ureido cephalosporins. 4,127,716, Cl. 544-27.000.
Breuer, Max E.: *See—*
Beaton, John M.; Huber, Joel E.; Padilla, Amphlett G.; and Breuer, Max E., 4,127,596, Cl. 260-397.300.
Bridges, Ronald P. Hinge terminal mounting for electric circuit disconnect switch. 4,127,753, Cl. 200-48.0KB.
Brigliadoro, George; and Feller, Herman H., to Rodex International, Ltd. Jet resonator pulsator. 4,127,081, Cl. 116-22.00A.
Bristol-Myers Company: *See—*
Juby, Peter F.; Hudyma, Thomas W.; and Partyka, Richard A., 4,127,720, Cl. 544-252.000.
British-American Tobacco Company Limited: *See—*
Comber, Richard, 4,127,136, Cl. 131-140.00R.
British Gas Corporation: *See—*
Timmins, Cyril; Conway, Henry L.; and Stroud, Henry J. F., 4,127,393, Cl. 48-213.000.
British Industrial Plastics Limited: *See—*
Kendall-Smith, Brian J.; Parker, Fredrick J.; and Nicklin, Norman B., 4,127,555, Cl. 260-37.00N.
Britton, Thomas C.; and Trepanier, Donald L., to Dow Chemical Company, The. Method of using 2(1H)-quinazolinethiones. 4,127,572, Cl. 424-248.500.
Brody, George: *See—*
Sherlock, Hugh P.; Golderg, Allan M.; Ciupke, Werner W.; and Brody, George, 4,127,112, Cl. 128-2.00S.
Broggi, Renato; and Falciani, Marco, to Dobfar S.p.A. Process for preparing penicillins. 4,127,571, Cl. 260-239.100.
Brovman, Mikhail Y.; Marchenko, Ivan K.; Mushenko, Nikolai Y.; Pilipenko, Alfred A.; Tkalenko, Vladimir A.; Romadin, Vladimir N.; and Larin, Gennady P. Machine for gas-cutting of metals. 4,127,258, Cl. 266-73.000.
Brown, Boveri & Cie AG: *See—*
Fischer, Wilfried; Kleinschmager, Herbert; Haar, Wilhelm; and Weddigen, Gert, 4,127,705, Cl. 429-104.000.
Rohr, Franz-Josef; and Holick, Hubert, 4,127,463, Cl. 204-195.00S.
Brown, Daniel M.: *See—*
Heersink, Evert J.; Birkenbach, Eugen J.; Brown, Daniel M.; and Schroeder, Thomas E., 4,127,179, Cl. 172-565.000.
Browning, Bruce W., to Browning, David L.; Browning, Marc S.; Browning, Christopher M.; Browning, John B.; Browning, Gloria S.; Browning, Michael C.; and Browning, Paul C. Sprocket shift assembly. 4,127,038, Cl. 74-217.00B.
Browning, Christopher M.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, David L.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, Gloria S.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, John B.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, Marc S.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, Michael C.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Browning, Paul C.: *See—*
Browning, Bruce W., 4,127,038, Cl. 74-217.00B.
Brunswick Industrial Supply Company: *See—*
Eagens, Jeffrey D., 4,126,922, Cl. 29-401.00D.
Buehler, John D., to William H. Rorer, Inc. Medicinal simethicone containing composition and its method of production. 4,127,650, Cl. 424-184.000.
Buell, David N.: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,127,078, Cl. 112-266.000.
Buffington, James F.; and Norris, Lee E. Grain drying apparatus and process. 4,126,946, Cl. 34-13.000.
Bullara, Leo A., to Huntington Institute of Applied Medical Research. Implantable pressure transducer. 4,127,110, Cl. 128-2.00P.
Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-PGF$_1$-hexamethyliminoamides. 4,127,569, Cl. 260-239.0BF.
Bunker Ramo Corporation: *See—*
Raslavsky, John M., III, 4,127,896, Cl. 364-200.000.
Tyree, Christopher W., 4,127,317, Cl. 339-134.000.
Burkhart, David H. Disposable switch plate and receptacle cover spirit level. 4,126,944, Cl. 33-347.000.
Burkwall, Morris P., Jr., to Quaker Oats Company, The. Caseinate replacement in semi-moist pet foods. 4,127,678, Cl. 426-250.000.
Burmeister, Eugene V.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.
Burroughs Wellcome Co.: *See—*
Gorvin, John H., 4,127,573, Cl. 546-103.000.
Burton, Parsons and Company, Inc.: *See—*
Rankin, Billy F., 4,127,423, Cl. 134-30.000.
Busby, William J.; and Verbunt, Piet L. H., to Exxon Research & Engineering Company. Process for coating an object with a continuous coating of plastics film. 4,127,685, Cl. 427-294.000.
Busch, Garland E., to Bendix Corporation, The. Multi orifice structure and method of making same. 4,127,234, Cl. 239-558.000.
Busse, Peter, to Richard Heinze, Firma. Detachable connector for cabinets. 4,127,353, Cl. 403-245.000.
Butcher, Reginald H. Washing apparatus. 4,127,137, Cl. 134-174.000.
Buzas, Andre; and Lavielle, Gilbert, to Universite d'Orleans. Disubstituted 2,5-benzamides and pharmaceutical compositions containing the same. 4,127,666, Cl. 424-274.000.
C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,127,074, Cl. 111-85.000.
Cachier, Gerard, to Thomson-CSF. Structure and process for millimetric wave sources integrated in a radial waveguide. 4,126,932, Cl. 29-580.000.
Cada, Frank E.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.
California Institute of Technology: *See—*
Gray, Harry B.; Rembaum, Alan; and Gupta, Amitava, 4,127,506, Cl. 252-431.00N.

Callan, John E.; and Scheinbart, Eric L., to Cities Service Company. Hot melt crosslinked butyl sealant. 4,127,545, Cl. 260-27.0BB.
Calvin, Robert B.: *See—*
Petersen, Alfred W.; and Calvin, Robert B., 4,127,400, Cl. 71-34.000.
Campbell, Robert W., to Phillips Petroleum Company. Aromatic sulfide/sulfone polymer production. 4,127,713, Cl. 528-391.000.
Canadian Appliance Manufacturing Company Limited: *See—*
Sherman, John A.; and Wardell, Peter S., 4,127,620, Cl. 261-26.000.
Canon Kabushiki Kaisha: *See—*
Ohtaki, Shohei; Tsunekawa, Tokuichi; Nakamura, Zenzo; and Uchiyama, Takashi, 4,127,325, Cl. 354-32.000.
Canron Corp.: *See—*
Stewart, John K.; and von Beckmann, Helmuth, 4,127,069, Cl. 104-7.00R.
Capps, Charles P.; Hardie, George S.; Ludwig, Arthur C.; Maybell, Michael J.; and Wideman, Gary A., to Raytheon Company. Radio frequency antenna with combined lens and polarizer. 4,127,857, Cl. 343-754.000.
Car-Bo-Tech Inc.: *See—*
Pletts, Donald C., 4,127,093, Cl. 123-119.00A.
Carba S.A.: *See—*
Bretscher, Max, 4,127,114, Cl. 128-2.05N.
Card, David R., to Champion International Corporation. Corner pad. 4,127,192, Cl. 206-586.000.
Carl Schleicher & Schull: *See—*
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, 4,127,486, Cl. 210-219.000.
Carlin, William W., to PPG Industries, Inc. Preparation of pigmentary chromic oxide. 4,127,643, Cl. 423-607.000.
Carnovia Verrebanstall FL, Firma: *See—*
Krohe, Alfred, 4,127,108, Cl. 126-369.000.
Carpenter, Clarence W. Bumpless pump apparatus adjustable to meet slave system needs. 4,127,360, Cl. 417-5.000.
Carr, John B.; and Durham, Harry G., to Shell Oil Company. Method of inhibiting lipogensis with 3-(benzoyl)oxiranecarboxamides. 4,127,656, Cl. 424-248.500.
Carrier Corporation: *See—*
Anderson, Gordon K.; and Ball, Orvin E., 4,126,933, Cl. 29-598.000.
Cascade Corporation: *See—*
Farmer, Stanley E.; Weinert, Harry F.; and Faust, Donald M., 4,127,205, Cl. 214-652.000.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,127,879, Cl. 360-51.000.
Cason, Charles M., III, to United States of America, Army. Gain spike and mode control for spiked lasers. 4,127,826, Cl. 331-94.50C.
Casull, Richard J. Single action revolver with safety locking cylinder. 4,126,953, Cl. 42-67.000.
Catanzarite, Vincent O. Self-venting battery. 4,127,702, Cl. 429-56.000.
Caterpillar Tractor Co.: *See—*
Henson, Ralph B., 4,126,997, Cl. 60-605.000.
Cavalla, John F., to John Wyeth & Brother Limited. Thiazole derivatives to treat inflammation. 4,127,663, Cl. 424-270.000.
Cave, Jerry K. Kits for making latch hook rugs. 4,127,191, Cl. 206-574.000.
Caves, Francis J., to Plessey Handel und Investments AG. Electronic drive signal distribution arrangement for a fuel injection system. 4,127,087, Cl. 123-32.0AE.
CBS Inc.: *See—*
Moustakas, Matthew A., 4,127,271, Cl. 273-100.000.
Schmoll, George F., III, 4,127,048, Cl. 84-1.030.
Celanese Corporation: *See—*
Kramer, Charles E., 4,127,560, Cl. 528-273.000.
Vanderspurt, Thomas H., 4,127,508, Cl. 252-457.000.
Central Soya Company, Inc.: *See—*
Szuhaj, Bernard F.; and Yaste, Joseph R., 4,127,419, Cl. 106-243.000.
Centro Sperimentale Metallurgico S.p.A.: *See—*
Azzerri, Nazzareno; and Tamba, Alberto, 4,127,450, Cl. 204-29.000.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Guiliani, Giampaolo, 4,127,617, Cl. 260-878.00R.
Ceskoslovenska Akademie ved: *See—*
Bleha, Miroslav; and Plichta, Zdenek, 4,127,732, Cl. 560-221.000.
Chadha, Naresh K.; Partridge, John J., Jr.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. 2-Hydroxyethyl-3-cyclopenten-1-ols and derivatives thereof. 4,127,736, Cl. 568-838.000.
Chalifour, Henri R.; Rose, Thomas A.; and Goldman, Mark B., to Raytheon Company. Microstrip switch wherein diodes are formed in single semiconductor body. 4,127,830, Cl. 333-7.00D.
Chambers, Robert R., to Atlantic Richfield Company. Luminescent solar collector. 4,127,425, Cl. 136-89.0PC.
Chamdru, Jacques; and Guilloton, Marcel, to Regie Nationale des Usines Renault. Tip for foundry core blast pipe. 4,127,159, Cl. 164-200.000.
Champion International Corporation: *See—*
Card, David R., 4,127,192, Cl. 206-586.000.
Roccaforte, Harry I., 4,127,229, Cl. 229-44.0CB.
Champlin, John W., to United States of America, Navy. Self-disengaging static seal. 4,127,275, Cl. 277-6.000.
Chang, Richard K.; and Stafford, Richard G., to Northeast Utilities Service Company. Raman scattering system and method for aerosol monitoring. 4,127,329, Cl. 356-301.000.
Charil, Jean P. G.: *See—*
Prudhon, Lucien P. E.; and Charil, Jean P. G., 4,127,750, Cl. 179-170.00R.
Charney, John G.: *See—*
Walulik, Albert B.; Charney, John G.; Turk, Donald A.; Lewandowski, Raymond D.; and Pickett, Charles G., 4,127,484, Cl. 210-130.000.
Chase, Robert W.: *See—*
Konya, Calvin J.; Chase, Robert W.; and Ameri, Seadet, 4,127,068, Cl. 102-23.000.
Chekmenev, Viktor I.: *See—*
Vasilkovsky, Vitaly P.; Koires, Vladimir I.; Khirdzhiev, Sergei G.; and Chekmenev, Viktor I., 4,127,019, Cl. 72-21.000.
Chen, Robert H. K.; and Kanojia, Ramesh M., to Ortho Pharmaceutical Corporation. Isolation of uteroevacuant substances from plant extracts. 4,127,651, Cl. 424-195.000.
Chen, Tsang J.; Miller, Raymond S.; and Perry, Edmond S., to Eastman Kodak Company. Scintillation counting compositions. 4,127,499, Cl. 252-301.170.
Chewning, Charles H., Jr.: *See—*
Winch, Allen R.; and Chewning, Charles H., Jr., 4,126,914, Cl. 19-99.000.
Chignac, Michel; Grain, Claude; and Pigerol, Charles, to Labaz. Process for the preparation of acetic acid derivatives. 4,127,604, Cl. 562-606.000.
Chignac, Michel; Grain, Claude; and Pigerol, Charles, to Labaz. Process for the preparation of an acetamide derivative. 4,127,607, Cl. 260-561.00R.
Childers, Thomas W.: *See—*
Hanson, Harry R.; Baugh, Hollis A.; Childers, Thomas W.; and Greer, James B., 4,127,168, Cl. 166-123.000.
Chisum, Finis L. Contour of log cabin logs for optimum seal. 4,126,977, Cl. 52-233.000.
Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.
Christopher, Chris J.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.
Chrysler Corporation: *See—*
Sabat, Arthur G., 4,127,210, Cl. 220-22.000.
Sarto, Jorma O., 4,127,627, Cl. 261-41.00B.
Churchill, Charles M.; Allen, George A.; and Stadalsky, John F., to Milliken Research Corporation. Method for improving the scrub-resistant properties of water-based latex paint compositions. 4,127,549, Cl. 260-29.60E.
Churchill, Charles M.; Allen, George A.; and Stadalsky, John F., to Milliken Research Corporation. Method for improving the scrub-resistant properties of water-based latex paint compositions. 4,127,550, Cl. 260-29.60E.
Ciba-Geigy Corporation: *See—*
Darms, Roland; and Meindl, Hubert, 4,127,712, Cl. 526-258.000.
Havalda, Paul, 4,127,487, Cl. 210-350.000.
Illy, Hugo; and Fussenegger, Werner, 4,127,718, Cl. 544-222.000.
Rody, Jean; and Heller, Hansjorg, 4,127,586, Cl. 260-308.00B.
Zahir, Abdul-Cader; and Renner, Alfred, 4,127,615, Cl. 260-837.00R.
Ciba Geigy (UK) Limited: *See—*
Smith, Malcolm J.; Miles, Peter; Richardson, Norman; and Finan, Michael A., 4,127,483, Cl. 210-58.000.
Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, to Labaz. Alicyclic compounds. 4,127,609, Cl. 260-563.00R.
Cimarusti, Christopher M.; and Levine, Seymour D., to E. R. Squibb & Sons, Inc. 4,5-Seco-steroids. 4,127,589, Cl. 260-340.5AS.
Cimarusti, Christopher M.: *See—*
Hauck, Frederic P.; Reid, Joyce; Narayanan, Venkatachala L.; Cimarusti, Christopher M.; Haugwitz, Rudiger D.; and Sundeen, Joseph E., 4,127,578, Cl. 546-205.000.
Cipollone, Albert. Dovetail machine and sliding dovetail construction. 4,127,153, Cl. 144-3.00R.
Cislak, Raymond S.; and Romanzi, Louis, Jr., to Gateway Industries, Inc. Method for attaching a plastic cover and apparatus employing same. 4,126,923, Cl. 29-416.000.
Cities Service Company: *See—*
Callan, John E.; and Scheinbart, Eric L., 4,127,545, Cl. 260-27.0BB.
Newcombe, Jack, 4,127,559, Cl. 260-45.75B.
Ciulacu, Paraschiv I.: *See—*
Gurgui, Constantin N.; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv I., 4,127,433, Cl. 156-498.000.
Ciupke, Werner W.: *See—*
Sherlock, Hugh P.; Golderg, Allan M.; Ciupke, Werner W.; and Brody, George, 4,127,112, Cl. 128-2.00S.
Clagett, Donald C.; Svetly, Michael J.; and Scott, Peter H., to W. R. Grace & Co. Urethane bioimplant membrane. 4,127,124, Cl. 128-156.000.
Clark, K. Warren: *See—*
Witzel, Frank; and Clark, K. Warren, 4,127,645, Cl. 424-44.000.
Clarke, J. Evan. Outlet box locator. 4,126,941, Cl. 33-180.00R.
Clarke, Patrick W.: *See—*
Bishop, John D.; Clarke, Patrick W.; and Schatz, William J., 4,127,894, Cl. 363-56.000.
Clearman, Jack F.: *See—*
Platt, Clark I.; and Clearman, Jack F., 4,127,015, Cl. 68-133.000.

Cleary, William I.: *See*—
Viid, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,127,815, Cl. 324-241.000.

Clethero, Percy A., to Sparrows Contract Services Limited. Lifting apparatus. 4,127,199, Cl. 214-1.00H.

Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, to Energy Recycling Company. Energy storage unit and system. 4,127,161, Cl. 165-34.000.

Coalmet Corporation: *See*—
Dondelewski, Michael A., 4,127,390, Cl. 44-1.00R.

Cockshott, Ian D.: *See*—
Martin, Graham E.; Cockshott, Ian D.; and McAloon, Kevin T., 4,127,706, Cl. 429-122.000.

Coffield, George G., Jr.; and Beug, Dennis L., to United States of America, Army. High velocity tapered bore gun and ammunition. 4,126,955, Cl. 42-78.000.

Coffman, Allen B., to JLG Industries, Inc. Track vehicle wheel mount and adjustment. 4,127,180, Cl. 180-6.480.

Coggiola, Marcel, to Robot Coupe, S.A. Sleeved, snap-on hub-to-shaft connection. 4,127,342, Cl. 403-243.000.

Cognacq, Jean-Claude, to Societe Anonyme dite: HEXACHIME. P-acetamidophenyl diethylaminoacetate. 4,127,671, Cl. 424-311.000.

Cohen, Amnon M., to Polak's Frutal Works, B.V. Process of the preparation of hydroxyfurenones. 4,127,592, Cl. 260-347.800.

Cohen, Martin, to Latin Percussion, Inc. Percussion instrument. 4,127,053, Cl. 84-402.000.

Colditz, Armin, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for changing the picture point resolution of continuous tone pictures during transition from reproduction to recording. 4,127,870, Cl. 358-77.000.

Colgate-Palmolive Company: *See*—
Karami, Hamzeh, 4,127,132, Cl. 128-287.000.
MacRae, David M.; and Roberts, Karl H., 4,127,515, Cl. 521-112.000.
Perla, Giulio; and D'Arcangeli, Alessandro, 4,127,372, Cl. 425-131.100.
Stokes, Dallas F., 4,127,496, Cl. 252-102.000.

Colln, Reimer; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Aminomethanephosphonic acid compounds containing plant-growth regulant compositions. 4,127,401, Cl. 71-76.000.

Comber, Richard, to British-American Tobacco Company Limited. Treatment of tobacco. 4,127,136, Cl. 131-140.00R.

Combustion Engineering Co., Inc.: *See*—
Anthony, Andrew J., 4,127,445, Cl. 176-87.000.

Combustion Engineering, Inc.: *See*—
Mehta, Arun K.; and Smith, Donald A., 4,127,237, Cl. 241-58.000.

Combustion Unlimited Incorporated: *See*—
Straitz, John F., III, 4,127,380, Cl. 431-15.000.

Commissariat a l'Energie Atomique: *See*—
Gama, Jean-Michel; and Paillard, Lionel, 4,127,444, Cl. 176-38.000.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris": *See*—
Mathieu, Francis D. A.; and Saintenoy, Edmond, 4,127,007, Cl. 405-171.000.

Compagnie Industrielle des Telecommunication Cit-Alcatel S.A.: *See*—
Deglin, Rene'; and Crapet, Francoise, 4,127,745, Cl. 179-15.0BA.

Compere, Alicia L.: *See*—
Griffith, William L.; and Compere, Alicia L., 4,127,447, Cl. 195-116.000.

Conklin, Harold A., Jr., to D. H. Baldwin Company. Piano key frame. 4,127,051, Cl. 84-423.000.

Connor, David T.; Young, Patricia A.; and von Strandtmann, Maximillian, to Warner-Lambert Company. [(4-Oxo-4H-1-benzopyran-3-yl)oxy] acetic acids and derivatives. 4,127,669, Cl. 424-283.000.

Conoco Methanation Company: *See*—
Watson, William B.; Winter, Richard G.; and Twizell, Geoffrey, 4,127,392, Cl. 48-197.00R.

Conrac Corporation: *See*—
House, J. Hardy, 4,127,840, Cl. 338-4.000.

Container Corporation of America: *See*—
Gardner, Jeffrey M., 4,127,304, Cl. 229-15.000.

Conti, Armand R. Cable reel brake apparatus. 4,127,241, Cl. 242-156.200.

Continental Group, Inc., The: *See*—
Davis, Glenn L., 4,127,430, Cl. 156-244.140.

Contois, Lawrence E.: *See*—
Rule, Norman G.; Berwick, Martin A.; and Contois, Lawrence E., 4,127,412, Cl. 96-1.0PC.

Contraves AG: *See*—
Baumann, Emil, 4,127,201, Cl. 214-85.000.

Control Components, Inc.: *See*—
Self, Richard E., 4,127,146, Cl. 137-625.300.

Conway, Henry L.: *See*—
Timmins, Cyril; Conway, Henry L.; and Stroud, Henry J. F., 4,127,393, Cl. 48-213.000.

Cooper, Charles. Protective bumper for vehicle body. 4,127,294, Cl. 293-62.000.

Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Compositions of a polyphenylene ether resin and alkenyl aromatic resins modified with EPDM rubber containing propylene. 4,127,558, Cl. 260-42.180.

Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., to Eli Lilly and Company. Process for 3β-aminoazetidin-2-ones. 4,127,568, Cl. 260-239.00A.

Copal Company Limited: *See*—
Matsumoto, Kunio, 4,127,326, Cl. 354-234.000.

Coppola, Gary M.: *See*—
Hardtmann, Goetz E.; and Coppola, Gary M., 4,127,574, Cl. 546-90.000.

Corban Industries, Inc.: *See*—
Lass, Harold M., 4,127,434, Cl. 156-526.000.

Cordis Corporation: *See*—
Ushakoff, Alexis E., 4,127,134, Cl. 128-419.00P.

Cornell, Paul A., to Electro-Clamp Corporation. Cable-clamping device with adjusting means. 4,126,918, Cl. 24-132.00R.

Corning Glass Works: *See*—
Albertsen, Peter S., 4,127,286, Cl. 285-41.000.
Frost, Rodney L., 4,127,691, Cl. 428-116.000.

Corwin, Edward J. Marking message card and template assembly and related input switching circuitry and method of making the assembly. 4,127,769, Cl. 235-456.000.

Cosack, Claus: *See*—
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, 4,127,486, Cl. 210-219.000.

Cotton, Incorporated: *See*—
Winch, Allen R.; and Chewning, Charles H., Jr., 4,126,914, Cl. 19-99.000.

Cotton, Lou S.: *See*—
Tefft, Franklin A.; Adams, Don L.; and Cotton, Lou S., 4,127,245, Cl. 244-17.130.

Coupling Systems, Inc.: *See*—
Ledonne, Alfred D.; and Scheuering, George A., 4,127,141, Cl. 137-15.000.

Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, to International Telephone and Telegraph Corporation. Time division telecommunication system. 4,127,742, Cl. 179-18.0FC.

Covington, Wayne F.: *See*—
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.

Cox, Bruce M.; and Gonzalez, Floyd A., to Halliburton Company. Coriolis mass flow rate metering means. 4,127,028, Cl. 73-194.00B.

Coy, David H.; and Kastin, Abba J. Novel docosapeptides, intermediates therefore and pharmaceutical compositions and methods employing said docosapeptides. 4,127,517, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel derivatives of gamma-endorphins, intermediates therefor, and compositions and methods employing said derivatives. 4,127,518, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Octadecapeptides, intermediates therefor, and compositions and methods employing said octadecapeptides. 4,127,519, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel nonadecapeptides, intermediates therefor, and compositions and methods employing said nonadecapeptides. 4,127,520, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel octacosapeptides, intermediates therefor and pharmaceutical compositions and methods employing said octacosapeptides. 4,127,521, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel triacontapeptides, intermediates therefor and pharmaceutical compositions and methods employing said triacontapeptides. 4,127,522, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel undecapeptides, intermediates therefor, and compositions and methods employing said undecapeptides. 4,127,523, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel dodecapeptides, intermediates therefor, and compositions and methods employing said dodecapeptides. 4,127,524, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel tridecapeptides, intermediates therefor, and compositions and methods employing said tridecapeptides. 4,127,525, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel tetradecapeptides, intermediates therefor, and compositions and methods employing said tetradecapeptides. 4,127,526, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel pentadecapeptides, intermediates therefor, and compositions and methods employing said pentadecapeptides. 4,127,527, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel derivatives of alpha-endorphin, intermediates therefor and compositions and methods employing said derivatives. 4,127,528, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel eicosapeptides, intermediates therefor and pharmaceutical compositions and methods employing said eicosapeptides. 4,127,529, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel heneicosapeptides, intermediates therefor and pharmaceutical compositions and methods employing said heneicosapeptides. 4,127,530, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel hexapeptides, intermediates therefor, and compositions and methods employing said hexapeptides. 4,127,531, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel heptapeptides, intermediates therefor, and compositions and methods employing said heptapeptides. 4,127,532, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel octapeptides, intermediates therefor, and compositions and methods employing said octapeptides. 4,127,533, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel tripeptides, intermediates therefor and pharmaceutical compositions and methods employing said tripeptides. 4,127,534, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel dipeptides, intermediates therefor, and compositions and methods employing said dipeptides. 4,127,535, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel tricosapeptides, intermedi-

ates therefor and pharmaceutical compositions and methods employing said tricosapeptides. 4,127,536, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel tetracosapeptides, intermediates therefor and pharmaceutical compositions and methods employing said tetracosapeptides. 4,127,537, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel pentacosapeptides, intermediates therefor and pharmaceutical compositions and methods employing said pentacosapeptides. 4,127,538, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel hexacosapeptides, intermediates therefore and pharmaceutical compositions and methods employing said hexacosapeptides. 4,127,539, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel derivatives of δ-endorphins, intermediates therefor, and compositions and methods employing said derivatives. 4,127,540, Cl. 260-8.000.

Coy, David H.; and Kastin, Abba J. Novel decapeptides, intermediates therefor, and compositions and methods employing said decapeptides. 4,127,541, Cl. 260-8.000.

Cragoe, Edward J., Jr: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr; Rooney, Clarence S.; and Reader, Grant W., 4,127,584, Cl. 260-306.80D.

Craig, James C., Jr.; Kozempel, Michael F.; and Elias, Stanley, to United States of America, Agriculture. Continuous fractionation of tallow and production of a cocoa butter-like plastic fat. 4,127,597, Cl. 260-428.500.

Cram, Phillip J.: *See*—
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Cramer, Robert L., to Bendix Corporation, The. Oxygen regulator. 4,127,129, Cl. 128-142.200.

Crapet, Francoise: *See*—
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Crosby, Stephen R.: *See*—
Blucher, Joseph T.; Crosby, Stephen R.; and Stephens, Dennis W., 4,127,045, Cl. 83-796.000.

Crowley, Francis X. Concrete tank. 4,126,976, Cl. 52-224.000.

Crowley, Richard P.: *See*—
Iannazzi, Fred D., 4,127,476, Cl. 209-3.000.

Crown Zellerbach Corporation: *See*—
Fujii, John S.; Whalley, William G.; and Schmidt, Fred L., 4,127,439, Cl. 162-40.000.

Cruthers, Larry R.: *See*—
Haugwitz, Rudiger D.; and Cruthers, Larry R., 4,127,664, Cl. 424-273.00R.

Cuffe, Patricia M.; LeBoeuf, Albert R.; and Travnicek, Edward A., to American Optical Corporation. Process for casting polymer rods. 4,127,638, Cl. 264-331.000.

Curtis, Joseph. Auxiliary cooking device for stuffed poultry and the like. 4,127,060, Cl. 99-419.000.

Curwick, LeRoy R.: *See*—
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Cutler-Hammer, Inc.: *See*—
Josemans, Leonardus J.; and Swessel, John A., Jr., 4,127,754, Cl. 200-67.00G.

D. H. Baldwin Company: *See*—
Conklin, Harold A., Jr., 4,127,051, Cl. 84-423.000.

Dachtera, William R., to International Business Machines Corporation. Self-quenching memory cell. 4,127,899, Cl. 365-154.000.

Daedalean Associates, Inc.: *See*—
Thiruvengadam, Alagu P.; and Hochrein, Ambrose A., Jr., 4,127,332, Cl. 366-131.000.

Dahlgren, Harold P.; and Dahlgren, Harvey W. Method for inking printing plates. 4,127,067, Cl. 101-426.000.

Dahlgren, Harvey W.: *See*—
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Daicel Ltd.: *See*—
Arisaka, Katsuharu; Watanabe, Kazu; and Sasazima, Kunihiko, 4,127,625, Cl. 264-28.000.

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Sakamoto, Takashi, 4,127,871, Cl. 358-80.000.

D'Amico, Anthony J. Method of constructing a metal paneled fence. 4,126,926, Cl. 29-446.000.

Damin Mineralien Gesellschaft mit beschrankter Haftung: *See*—
Aldick, Willi; and Lotz, Alexander, 4,127,480, Cl. 209-457.000.

Damman, Cornelis C., to Holland Mechanics B.V. Apparatus for detecting lateral irregularities of the rim of a wire spoke wheel. 4,126,942, Cl. 33-203.120.

Dankesreiter, Georg: *See*—
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Dansbach, David J.; and Snyder, James E., to General Signal Corporation. Communications system. 4,127,845, Cl. 340-151.000.

D'Arcangeli, Alessandro: *See*—
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Darms, Roland; and Meindl, Hubert, to Ciba-Geigy Corporation. Phthalic acid diesters or ester-amides substituted by alkenylamino groups. 4,127,712, Cl. 526-258.000.

Daspit, Ronald A. Coupling for pipelines. 4,127,289, Cl. 285-322.000.

Date, Hikaru: *See*—
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Daugherty, Ralph N. Piezoelectric stress indicator for mine roofs. 4,127,788, Cl. 310-328.000.

Davies, Pamela M., to Le Carbone (Great Britain) Limited. Pipe joints. 4,127,287, Cl. 285-55.000.

Davies, William: *See*—
Fosker, George R.; and Davies, William, 4,127,570, Cl. 260-239.100.

Davis, Bryan T.: *See*—
Elliott, John S.; Davis, Bryan T.; and Norman, Stephen, 4,127,493, Cl. 252-51.50A.

Davis, Glenn L., to Continental Group, Inc., The. Method of making a container having blown plastic liner and method and apparatus for forming same. 4,127,430, Cl. 156-244.140.

Davis, Paul: *See*—
Shumrak, George K.; and Davis, Paul, 4,127,189, Cl. 206-520.000.

Dayco Corporation: *See*—
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De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See*—
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DeBolt, Harold E.; and Henze, Thomas W., to Avco Corporation. Silicon carbide filaments and method. 4,127,659, Cl. 427-249.000.

Deex, Oliver D.; and Weiss, Virgil W., to Monsanto Company. Reinforced polyarylene esters. 4,127,557, Cl. 260-40.00R.

Degelman Industries Ltd.: *See*—
Stevens, G. Wesley, 4,127,341, Cl. 403-113.000.

Deglin, Rene'; and Crapet, Francoise, to Compagnie Industrielle des Telecommunication Cit-Alcatel S.A. Date time-multiplex switching network for use in a telecommunications exchange. 4,127,745, Cl. 179-15.0BA.

Deguchi, Masahiro: *See*—
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Dektor Counterintelligence & Security, Inc.: *See*—
Bell, Allan D., Jr., 4,127,817, Cl. 325-364.000.

Delavega, Robert P.: *See*—
Meyer, Philip J.; and Delavega, Robert P., 4,127,760, Cl. 219-121.00P.

Dempsey, Robert E.; and Throne, James L., to Standard Oil Company. Thermoforming process for polyalkylene terephthalate polyester resins. 4,127,631, Cl. 264-92.000.

Deneuville, Alain F. G., to International Business Machines Corporation. Metal base transistor with thin film amorphous semiconductors. 4,127,861, Cl. 357-15.000.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 8H-Pyrazolo[4',3':5,6]pyrido[3,4-e] [1,2,4]triazolo-[1,5-a]pyrimidines. 4,127,655, Cl. 424-246.000.

Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. 4H-pyrazolo[1,5-a]pyrazolo[4',3':5,6]pyrido[3,4-e]pyrimidin-5(8H)one and derivatives thereof. 4,127,657, Cl. 424-248.540.

de Ridder, Adriaan J.: *See*—
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DeSoto, Inc.: *See*—
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Determann, Hans; Reinheimer, Gunter; and Stankewitz, Hans W., to Ernst Leitz Wetzlar GmbH. Direct illumination apparatus for light and dark field illumination. 4,127,318, Cl. 350-91.000.

de Vries, Huibert, to Bos Kalis Westminster Group N.V. Movable connection for line sections. 4,127,288, Cl. 285-136.000.

DeWitt, Arthur W. Method for forming a concrete piling foundation. 4,127,002, Cl. 405-239.000.

Dieckamp, Herman M.: *See*—
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Dieringer, Andrew M.; and Sheperd, Ervin M., to Rexnord Inc. Apparatus for removing ties under railroad track. 4,127,070, Cl. 104-9.000.

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Dionex Corporation: *See*—
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DiSandro, Raymond D.: *See*—
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Diwell, Alan F.: *See*—
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Broggi, Renato; and Falciani, Marco, 4,127,571, Cl. 260-239.100.

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Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts: *See—*
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Dumont, Eston A. Dual-purpose skyline log-yarding carriage. 4,127,197, Cl. 212-122.000.
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Endo, Kunio: *See—*
Harada, Susumu; and Endo, Kunio, 4,127,086, Cl. 123-32.0EL.

Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, to Toyo Boseki Kabushiki Kaisha. Phosphorus-containing compounds. 4,127,590, Cl. 260-346.740.

Energetics Science, Inc.: *See—*
Blurton, Keith F.; and Sedlak, John M., 4,127,462, Cl. 204-195.00R.

Energy Development Associates: *See—*
Symons, Philip C.; and Amato, Carmelo J., 4,127,701, Cl. 429-19.000.

Energy Recycling Company: *See—*
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,127,161, Cl. 165-34.000.

England, George J.: *See—*
Gaske, Joseph E.; Packer, Eugene S.; and England, George J., 4,127,460, Cl. 204-159.130.

Entech Corporation: *See—*
McConnellogue, Neal J., 4,127,213, Cl. 220-268.000.

Enterprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See—*
Vilain, Robert, 4,127,003, Cl. 405-202.000.
Vilain, Robert H., 4,127,004, Cl. 405-202.000.

Epstein, Barry M. Surge protector and test network for AC equipment. 4,127,888, Cl. 361-91.000.

Erikson, Rolf B., to Bell & Howell Company. Device for sorting mail according to zip codes. 4,127,194, Cl. 209-578.000.

Erlenmayer, Udo; Gropp, Reinhard; and Zenn, Hans, to Metallschlauch-Fabrik Pforzheim (vorm. Hch. Witzenmann) Gesellschaft mit beschrankter Haftung. Movable pipeline element. 4,127,145, Cl. 137-599.000.

Ernst Leitz Wetzlar GmbH: *See—*
Determann, Hans; Reinheimer, Gunter; and Stankewitz, Hans W., 4,127,318, Cl. 350-91.000.
Leitz, Ludwig, 4,127,778, Cl. 250-550.000.

Erwin, Ransome W., to Austral-Erwin Engineering Co. Heat exchange apparatus. 4,127,164, Cl. 165-133.000.

Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See—*
Sick, Erwin, 4,127,771, Cl. 250-221.000.

Ethicon, Inc.: *See—*
Martinez, Miguel, 4,127,133, Cl. 128-339.000.

Ethyl Corporation: *See—*
Elliott, John S.; Davis, Bryan T.; and Norman, Stephen, 4,127,493, Cl. 252-51.50A.

Etienne, Michel, to Automobiles Peugeot. Charging circuit for an auxiliary battery on an electrically-propelled vehicle. 4,127,803, Cl. 320-2.000.

Eue, Ludwig: *See—*
Timmler, Helmut; Draber, Wilfried; and Eue, Ludwig, 4,127,404, Cl. 71-90.000.

Evans, Raymond D., Jr.: *See—*
Montgomery, Robert H., Jr.; and Evans, Raymond D., Jr., 4,127,000, Cl. 405-261.000.

Evans, Robert F., to Smith International, Inc. Rock bit with welded bearing pins. 4,127,043, Cl. 76-108.00A.

Exxon Production Research Company: *See—*
Hanson, Harry R.; Baugh, Hollis A.; Childers, Thomas W.; and Greer, James B., 4,127,168, Cl. 166-123.000.
Watkins, Larry A.; and Graham, John W., 4,127,173, Cl. 166-276.000.

Exxon Research & Engineering Company: *See—*
Baird, William C., Jr.; Bearden, Roby, Jr.; and Ledford, Thomas H., 4,127,470, Cl. 208-58.000.
Busby, William J.; and Verbunt, Piet L. H., 4,127,685, Cl. 427-294.000.
Ghosh, Amal K.; and Feng, Tom, 4,127,738, Cl. 136-89.0NB.
Lundberg, Robert D.; Phillips, Robert R.; Makowski, Henry S.; and Brenner, Douglas, 4,127,546, Cl. 260-27.0BB.
Sutherland, Thomas H.; and Smith, Peter A. C., 4,127,618, Cl. 260-879.000.

Ezoe, Mitsuhiko, to Nissan Motor Company, Limited. Closed-loop emission control apparatus for multi-cylinder internal combustion engines having a plurality of exhaust systems. 4,127,088, Cl. 123-32.0EE.

Fahlvik, Hans A.; and Sandquist, Kurt E., to Aktiebolaget Electrolux. Autoclave for sterilizing objects. 4,127,384, Cl. 422-109.000.

Falciani, Marco: *See—*
Broggi, Renato; and Falciani, Marco, 4,127,571, Cl. 260-239.100.

Falconnet, Bernard; and Pinhas, Henri, to Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation. Piperazine alkanols. 4,127,661, Cl. 424-250.000.

Fallier, Charles N., Jr.: *See—*
Proud, Joseph M., Jr.; Norman, Scott L.; and Fallier, Charles N., Jr., 4,127,784, Cl. 307-311.000.

Fang, James C., to Du Pont de Nemours, E. I., and Company. Mixed esters of dibasic unsaturated acids, glycols and glycidyl esters. 4,127,551, Cl. 260-31.600.

Fannin, Loyd W.; and Malpass, Dennis B., to Texas Alkyls, Inc. Hydrocarbon soluble straight-chain di-(lower alkyl) magnesium compositions. 4,127,507, Cl. 252-431.00R.

Farcasiu, Malvina; and Whitehurst, Darrell D., to Electric Power Research Institute, Inc. Process for the isolation of chemicals from processed coals. 4,127,475, Cl. 208-310.00R.

Farmer, Marion R., to Aluma-Form Inc. Level mount electrical component bracket. 4,127,739, Cl. 174-45.00R.

Farmer, Stanley E.; Weinert, Harry F.; and Faust, Donald M., to Cascade Corporation. Lift truck load clamp for handling paper rolls. 4,127,205, Cl. 214-652.000.

Farmos-Yhtyma Oy: *See—*
Merensalmi, Matti J., 4,127,676, Cl. 426-2.000.

Faust, Donald M.: *See—*
Farmer, Stanley E.; Weinert, Harry F.; and Faust, Donald M., 4,127,205, Cl. 214-652.000.

Fayolle, Aime G., to Metraplan SPAA. Apparatus for depositing objects of small thickness, especially skins, e.g. for the stacking thereof. 4,127,264, Cl. 271-191.000.

FBM International, Inc.: *See—*
King, Percy, 4,126,981, Cl. 53-565.000.

Feiten, Karl-Josef: *See—*
Flemmer, Dieter; Halberschmidt, Friedrich; and Feiten, Karl-Josef, 4,127,683, Cl. 427-287.000.

Felauer, Ethel E.: *See—*
Graham, Bruce A.; Puttock, Michael A.; Felauer, Ethel E.; and Neidermyer, Robert W., 4,127,402, Cl. 71-76.000.

Feller, Herman H.: *See—*
Brigliadoro, George; and Feller, Herman H., 4,127,081, Cl. 116-22.00A.

Feng, Tom: *See—*
Ghosh, Amal K.; and Feng, Tom, 4,127,738, Cl. 136-89.0NB.

Ferag AG: *See—*
Eberle, Jurg; and Leu, Willy, 4,127,262, Cl. 271-12.000.

Ferguson, Roy A. Boat roller. 4,127,281, Cl. 280-47.13B.

Fernsler, Ronald E.; Peer, John C.; and Luz, David W., to RCA Corporation. Inrush current start-up circuit for a television receiver. 4,127,875, Cl. 358-190.000.

Ferren, Richard A.; and Radice, Peter F., to Pennwalt Corporation. Single electrode poling of dielectric films. 4,127,681, Cl. 427-100.000.

Ferrill, Richard M., Jr., to Hercules Incorporated. Process for granulating lead chromate-containing pigments. 4,127,421, Cl. 106-298.000.

Fiat-Allis Construction Machinery, Inc.: *See—*
Rockwell, Harvey M., 4,126,994, Cl. 60-420.000.

Fiat-Allis Macchine Movimento Terra, S.p.A: *See—*
Grattapaglia, Giorgio; and Barbagli, Rino, 4,126,993, Cl. 60-329.000.

Finan, Michael A.: *See—*
Smith, Malcolm J.; Miles, Peter; Richardson, Norman; and Finan, Michael A., 4,127,483, Cl. 210-58.000.

Fink, Konrad: *See—*
Muller, Rudolf; Seeger, Josef; and Fink, Konrad, 4,127,257, Cl. 266-44.000.

Firminhac, Ralph H.: *See—*
Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, 4,127,451, Cl. 204-38.00A.

Fischer, Dieter, to Battelle-Institute e.V. Storage element for an erasable, digital permanent storage. 4,127,898, Cl. 365-146.000.

Fischer, Richard K.: *See—*
Melley, Joseph F.; and Fischer, Richard K., 4,127,300, Cl. 296-28.00R.

Fischer, Wilfried; Kleinschmager, Herbert; Haar, Wilhelm; and Weddigen, Gert, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,127,705, Cl. 429-104.000.

Fish, Donald C. Spar float recovery capsule. 4,126,907, Cl. 9-9.000.

Fisher, Gerald C.; and Scanland, Joseph E., to Roper Corporation. Cutter disc assembly for rotary lawn mower. 4,126,990, Cl. 56-295.000.

Fladby, Tron-Halvard, to A/S Akers Mek. Verksted. Regulating the flow capacity of a positive displacement pump by controlling inlet valve means. 4,127,362, Cl. 417-53.000.

Flanders, Robert D. Process for making a reinforced board made from lignocellulosic particles. 4,127,636, Cl. 264-113.000.

Fleischer, Donald W., to Veeder Industries Inc. Counter operating system. 4,127,767, Cl. 235-92.0FL.

Fleischhacker, James E.; Wasserlein, Henry G., Jr.; and Kloth, James A., deceased (by Kloth, Marion L., administrator), to AMP Incorporated. Modular connector for connecting groups of wires. 4,127,312, Cl. 339-99.00R.

Fleischhacker, Peter: *See—*
Nuber, Otto, 4,127,013, Cl. 66-92.000.

Flemmer, Dieter; Halberschmidt, Friedrich; and Feiten, Karl-Josef, to Saint-Gobain Industries. Method of stacking glass sheets. 4,127,683, Cl. 427-287.000.

Floyd, Roger M.: *See—*
Bamburg, Robert A.; Floyd, Roger M.; and Duncan, Farris N., 4,127,230, Cl. 229-45.00R.

FMC Corporation: *See—*
Radimer, Kenneth J., 4,127,456, Cl. 204-82.000.

FMC of Canada, Ltd.: *See—*
Larson, Robert W.; and Lundberg, John P., 4,127,152, Cl. 144-3.00D.

Fokker, Herman: *See—*
Asselman, George A. A.; Fokker, Herman; and Meijer, Roelf J., 4,126,995, Cl. 60-524.000.

Forbes, Vernal D.: *See—*
Gookin, Albert B., Jr.; Forbes, Vernal D.; and Venzke, Stephen B., 4,127,811, Cl. 324-130.000.

Ford Motor Company: *See—*
Baker, Robert R., 4,127,684, Cl. 427-287.000.

Forney, Edgar W., Jr.; Johnson, Tore R.; and O'Keefe, Michael F., to AMP Incorporated. Termination means for fiber optic bundle. 4,127,319, Cl. 350-96.200.

Forter, Willy; and Ott, Hans-Rudolf, to Sandoz Ltd. Bis-(1-substituted phenylazo-2-hydroxynaphthalene-3-carboxamido)naphthalenes. 4,127,567, Cl. 260-174.000.

Fortier, Gustave. Fireplace fuel stove and grill device. 4,127,099, Cl. 126-137.000.

Fosker, George R.; and Davies, William, to Beecham Group Limited. β-Aminopenicillins, salts and esters. 4,127,570, Cl. 260-239.100.

Fossati, Franco; Peditto, Andrea; and Petrillo, Vincenzo, to Liquichimica Robassomero S.p.A. Dispersing additive for lubricating oils and process for the preparation thereof. 4,127,492, Cl. 252-51.50A.

Foster, Alan D., to Dayton-Walther Corporation. Offset spindle support. 4,127,306, Cl. 301-127.000.

Foundation: The Research Institute for Special Inorganic Materials, The: *See—*
Yajima, Seishi; Shishido, Toetsu; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,127,411, Cl. 75-236.000.

Fourney, Michael E.; and Jensen, Ronald P., to Ronald P. Jensen, M.D., Inc. System of controlling astigmatism during cataract surgery. 4,127,109, Cl. 128-1.00R.

Foust, Doug L. Waterbed frame connector. 4,126,906, Cl. 5-295.000.

Fowles, Thomas A.; and Winchell, David A., to Baxter Travenol Laboratories, Inc. Container and hermetically sealed tamperproof protector. 4,127,208, Cl. 215-253.000.

Fox, Donald P.: *See—*
Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,127,815, Cl. 324-241.000.

Fox Pool Corporation: *See—*
Russell, Clayton C.; and Witte, Donald H., 4,126,905, Cl. 4-172.000.

Fox, Rita T.: *See—*
Hauck, Frederic P.; Fox, Rita T.; and Watrous, John R., 4,127,579, Cl. 546-17.000.

Frame, Robert R., to UOP Inc. Treating a petroleum distillate with an alkanolamine hydroxide and a supported oxidation catalyst impregnated with polynuclear aromatic sulfonic acid. 4,127,474, Cl. 208-207.000.

Franetzki, Manfred, to Siemens Aktiengesellschaft. Medical apparatus for the measurement of respiratory flow independent of gaseous composition. 4,127,115, Cl. 128-2.080.

Frankland, Roger A., to Beckman Instruments, Inc. High intensity bar graph. 4,127,794, Cl. 315-169.00R.

Free, Dustin L.: *See—*
Sharpe, James R.; and Free, Dustin L., 4,127,174, Cl. 166-291.000.

Fremont, Joseph M., to Du Pont de Nemours, E. I., and Company. Preparation of butynediol using bismuth modified spheroidal malachite. 4,127,734, Cl. 568-855.000.

Frers, Gerd; Nickel, Hans; and Henning, Klaus, to Andreas Stihl, Firma. Starting device for an internal combustion engine, especially a chain saw engine. 4,127,098, Cl. 123-185.0BA.

Fresard, Marcel, to Mefina S.A. Portable sewing machine. 4,127,077, Cl. 112-258.000.

Fresow, Jurgen; and Wurst, Bert, to Robert Bosch GmbH. Adjustable timing electronic internal combustion engine ignition swit system. 4,127,092, Cl. 123-117.00D.

Friel, Daniel D., to Du Pont de Nemours, E. I., and Company. Vacuum laminating process. 4,127,436, Cl. 156-630.000.

Friello, Dominick R.: *See—*
Fronczkowski, Paul R.; and Friello, Dominick R., 4,127,677, Cl. 426-5.000.

Frohlich, Alfons, to OPTI Patent- Forschungs- und Fabrikations-AG. Process for manufacturing a woven slide-fastener unit. 4,127,147, Cl. 139-11.000.

Fronczkowski, Paul R.; and Friello, Dominick R., to Life Savers, Inc. Xylitol-coated chewing gum and method. 4,127,677, Cl. 426-5.000.

Frost, R. Jack. Programmable controller. 4,127,823, Cl. 328-130.000.

Frost, Rodney I., to Corning Glass Works. Thermal shock resistant honeycomb structures. 4,127,691, Cl. 428-116.000.

Fuchs, Julius J., to Du Pont de Nemours, E. I., and Company. Herbicidal thiolcarbamates. 4,127,600, Cl. 260-455.00A.

Fuji Xerox Co., Ltd.: *See—*
Sesoko, Shinichi, 4,127,083, Cl. 118-653.000.

Fujii, John S.; Whalley, William G.; and Schmidt, Fred L., to Crown Zellerbach Corporation. Pretreatment of lignocellulose with anthraquinone prior to pulping. 4,127,439, Cl. 162-40.000.

Fujita, Masayuki: *See—*
Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, 4,127,626, Cl. 264-30.000.

Fushiki, Takeshi: *See—*
Uchida, Mitsuo; Fushiki, Takeshi; and Awata, Mitsuru, 4,127,628, Cl. 264-42.000.

Fuso Keigokin Co., Ltd.: *See—*
Takahashi, Katsuhiko; and Doi, Hachiro, 4,126,985, Cl. 56-13.600.

Fussenegger, Werner: *See—*
Illy, Hugo; and Fussenegger, Werner, 4,127,718, Cl. 544-222.000.

G. Rau: *See—*
Stockel, Dieter; Schneider, Friedrich; and Heiss, Hermann, 4,127,700, Cl. 428-558.000.

Ga-Vehren Engineering Company: *See—*
VerMehren, Hubert R., 4,126,948, Cl. 34-150.000.

Gagliardo, Michael; Schubert, Howard W.; Malvin, Rahm P.; and Lum, Jackson, to Medfare, Inc. Method and apparatus for tallying food items selected on menus. 4,127,232, Cl. 235-419.000.

Gail, Josef, to Maschinenfabrik Fahr AG Gottmadingen. Apparatus for the automatic lateral guidance of agricultural machines. 4,126,984, Cl. 56-10.200.

Gakken Co., Ltd.: *See—*
Noguchi, Ichiro, 4,127,785, Cl. 310-89.000.

Galantay, Eugene E., to Sandoz, Inc. 1-Phenyl-2,3-butadien-1-ols and method of use. 4,127,658, Cl. 424-248.570.

Gama, Jean-Michel; and Paillard, Lionel, to Commissariat a l'Energie Atomique. Device for thermal protection of a nuclear reactor vessel. 4,127,444, Cl. 176-38.000.

Gandolfi, Luciano; and Rocak, Rudolf, to SGS-ATES Componenti Elettronici S.p.A. Method of passivating high-voltage power semiconductor devices. 4,126,931, Cl. 29-578.000.

Gardikes, John J.; and Toeniskoetter, Richard H., to Ashland Oil, Inc. Aluminum phosphate binder composition cured with ammonia and amines. 4,127,157, Cl. 164-12.000.

Gardisette Holding AG: *See—*
Pape, Hermann; Schroeder, Peter; and Schmitz, Rudolf, 4,126,921, Cl. 29-281.100.

Gardner, Jeffrey M., to Container Corporation of America. Self erecting partition. 4,127,304, Cl. 229-15.000.

Gardner, Mark R.; and Rasmussen, Hazle M., to Rasmussen, Hazle Mary. Back-up and alarm circuit system. 4,127,854, Cl. 340-640.000.

Gaske, Joseph E.; Packer, Eugene S.; and England, George J., to DeSoto, Inc. Radiation-curing aqueous coatings providing a nonadherent surface. 4,127,460, Cl. 204-159.130.

Gateway Industries, Inc.: *See—*
Cislak, Raymond S.; and Romanzi, Louis, Jr., 4,126,923, Cl. 29-416.000.

Gatti, Richard M.: *See—*
Grosso, Clair R.; Gatti, Richard M.; Miles, Robert J.; and DiSandro, Raymond D., 4,127,816, Cl. 325-67.000.

Gauthier, Ray J., to United States Gypsum Company. Method for extruding thermoplastic polymers. 4,127,635, Cl. 264-102.000.

Gebhardt, Ulrich: *See—*
Richter, Gerhard; Mund, Konrad; Gebhardt, Ulrich; and Rao, Raghavendra, 4,126,934, Cl. 29-623.100.

Gebruder Seidel KG: *See—*
Ritzenhoff, Hermann, 4,127,209, Cl. 215-254.000.

Gebrueder Buehler AG: *See—*
Manser, Josef; and Dankesreiter, Georg, 4,126,945, Cl. 34-4.000.

Gelotte, Karl O.; Zalay, Andrew W.; and Bell, Malcolm R., to Sterling Drug Inc. Preparation of 3-(pyridinyl)-2-cyclohexene-1-ones. 4,127,583, Cl. 546-340.000.

General Atomic Company: *See—*
Akins, Robert J.; and Slivenko, Victor, 4,126,924, Cl. 29-423.000.
Norman, John H.; Roemer, Thomas S.; Kirstein, Bruce E.; and Mysels, Karol J., 4,127,644, Cl. 423-648.00R.

General Electric Company: *See—*
Cooper, Glenn D.; and Katchman, Arthur, 4,127,558, Cl. 260-42.180.
Kim, Seung K., 4,127,867, Cl. 358-28.000.
Lederman, Frank L.; and Tiemann, Jerome J., 4,127,034, Cl. 73-626.000.
Patterson, William R., 4,127,357, Cl. 415-116.000.

General Signal Corporation: *See—*
Dansbach, David J.; and Snyder, James E., 4,127,845, Cl. 340-151.000.
McEathron, Eugene D., 4,127,308, Cl. 303-35.000.

Genesco, Inc.: *See—*
Stern, Erica, 4,127,135, Cl. 128-425.000.

Geotel, Inc.: *See—*
Meyer, Philip J.; and Delavega, Robert P., 4,127,760, Cl. 219-121.00P.

Gero, Stephan: *See—*
Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, 4,127,609, Cl. 260-563.00R.

Gesellschaft fur Kernforschung GmbH: *See—*
Kienhofer, Manfred; and Pedrerol, Johann, 4,127,122, Cl. 128-142.500.

Ghosh, Amal K.; and Feng, Tom, to Exxon Research & Engineering Company. Photovoltaic device containing an organic layer. 4,127,738, Cl. 136-89.0NB.

Ghosh, Suhas: *See—*
Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, 4,127,742, Cl. 179-18.0FC.

Gifford, Bruce M.: *See—*
Owen, A. B.; and Gifford, Bruce M., 4,127,277, Cl. 277-204.000.

Gilead, Gideon. Irrigation apparatus. 4,126,998, Cl. 405-51.000.

Giles, George R.; and Richards, Donald, to Normalair-Garret (Holdings) Limited. Air cycle air conditioning systems. 4,127,011, Cl. 62-402.000.

Gill, Peter J. Threaded fastener recess forming punch. 4,126,908, Cl. 10-7.000.

Gillemot, George W., to Thompson, John T., a part interest. Cable transfer panel. 4,127,748, Cl. 179-98.000.
Gillen, Jerry. X-ray marker. 4,127,774, Cl. 250-476.000.
Gobin, Donald L.; and Scanland, Joseph E., to Roper Corporation. Cutter pin for rotary mower having lenticular section. 4,126,991, Cl. 56-295.000.
Godfrey, Darryl A., to Eastman Kodak Company. Polyethylene containing hot melt adhesives. 4,127,619, Cl. 260-889.000.
Goepel, Charles A., to GTE Sylvania Incorporated. Tuned oscillator ballast circuit with transient compensating means. 4,127,893, Cl. 363-37.000.
Golderg, Allan M.: *See—*
Sherlock, Hugh P.; Golderg, Allan M.; Ciupke, Werner W.; and Brody, George, 4,127,112, Cl. 128-2.00S.
Goldman, Mark B.: *See—*
Chalifour, Henri R.; Rose, Thomas A.; and Goldman, Mark B., 4,127,830, Cl. 333-7.00D.
Goldmann, Wolf: *See—*
Kreft, Wilfried; and Goldmann, Wolf, 4,127,406, Cl. 75-26.000.
Goldsmith, Jesse M.: *See—*
O'Nan, Alex, Jr.; and Goldsmith, Jesse M., 4,127,397, Cl. 55-479.000.
Gonzalez, Floyd A.: *See—*
Cox, Bruce M.; and Gonzalez, Floyd A., 4,127,028, Cl. 73-194.00B.
Gookin, Albert B., Jr.; Forbes, Vernal D.; and Venzke, Stephen B., to Hewlett-Packard Company. Auto-calibrating voltmeter. 4,127,811, Cl. 324-130.000.
Gorgone, Robert L.; Iannadrea, Gerald; and Kovach, Alan J., to Ardac, Inc. Apparatus for conducting secondary tests for security validation. 4,127,328, Cl. 356-71.000.
Gorlach, Hans; and Nolte, Heinz. Skate board vehicle. 4,127,282, Cl. 280-87.04A.
Gorvin, John H., to Burroughs Wellcome Co. Ditetrazole substituted acridone compounds. 4,127,573, Cl. 546-103.000.
Graham, Bruce A.; Puttock, Michael A.; Felauer, Ethel E.; and Neidermyer, Robert W., to Uniroyal, Inc.; and Uniroyal Ltd. Substituted 2,3-dihydro-1,4-oxathiin plant growth regulants. 4,127,402, Cl. 71-76.000.
Graham, George L. Adhesive-lined insect capture device and kit. 4,126,959, Cl. 43-136.000.
Graham, John W.: *See—*
Watkins, Larry A.; and Graham, John W., 4,127,173, Cl. 166-276.000.
Graham-White Sales Corporation: *See—*
Johnston, F. Bertram; and Grybek, Roland S., 4,127,383, Cl. 422-5.000.
Grain, Claude: *See—*
Chignac, Michel; Grain, Claude; and Pigerol, Charles, 4,127,604, Cl. 562-606.000.
Chignac, Michel; Grain, Claude; and Pigerol, Charles, 4,127,607, Cl. 260-561.00R.
Grasser, Katalin: *See—*
Mikite, Gyula; Petocz, Lujza; Kosoczky, Ibolya; and Grasser, Katalin, 4,127,576, Cl. 424-265.000.
Grassner, Hans: *See—*
Schulz, Bernhard; Grassner, Hans; Jaeger, Peter; and Nohe, Heinz, 4,127,455, Cl. 204-78.000.
Grattapaglia, Giorgio; and Barbagli, Rino, to Fiat-Allis Macchine Movimento Terra, S.p.A. Hydraulic system for an earth-moving machine and a temperature-controlled valve for a hydraulic system. 4,126,993, Cl. 60-329.000.
Gray, Harry B.; Rembaum, Alan; and Gupta, Amitava, to California Institute of Technology. Photochemical preparation of olefin addition catalysts. 4,127,506, Cl. 252-431.00N.
Great Lakes Carbon Corporation: *See—*
Joo', Louis A., 4,127,634, Cl. 264-105.000.
Green, David T., to United States Surgical Corporation. Wide fascia staple cartridge. 4,127,227, Cl. 227-83.000.
Green, Hal, to Empire Automotive, Inc. Roof molding detachable sun roof panel for automobiles. 4,127,302, Cl. 296-137.00B.
Greene, Michael E., to Solar Works, Inc. Solar heater for water and the like. 4,127,104, Cl. 126-271.000.
Greer, James B.: *See—*
Hanson, Harry R.; Baugh, Hollis A.; Childers, Thomas W.; and Greer, James B., 4,127,168, Cl. 166-123.000.
Griffith, Joseph W. Tone arm system for record turntable. 4,127,274, Cl. 274-23.00R.
Griffith, William L.; and Compere, Alicia L., to United States of America, Energy. Biomass growth restriction in a packed bed reactor. 4,127,447, Cl. 195-116.000.
Grinberg, Jan: *See—*
Jacobson, Alexander D.; Grinberg, Jan; Sprotbery, Donald E.; and Boswell, Donald D., 4,127,322, Cl. 353-31.000.
Grobova, Kapitalina I.: *See—*
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.
Gropp, Reinhard: *See—*
Erlenmayer, Udo; Gropp, Reinhard; and Zenn, Hans, 4,127,145, Cl. 137-599.000.
Grosso, Clair R.; Gatti, Richard M.; Miles, Robert J.; and DiSandro, Raymond D. Carrier detect and automatic loopback circuit. 4,127,816, Cl. 325-67.000.
Grove, Leslie H. Feeding water-laden air into a continuous open flame. 4,127,379, Cl. 431-4.000.
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., to Philip Morris, Incorporated. α-Substituted vinyl menthyl carbonates. 4,127,601, Cl. 260-463.000.
GRUNDIG E. M. V. Elektro-Mechanische Versuchsanstalt: *See—*
Emmert, Reinhold, 4,127,880, Cl. 360-68.000.
Grundmann, Peter: *See—*
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, 4,127,486, Cl. 210-219.000.
Grybek, Roland S.: *See—*
Johnston, F. Bertram; and Grybek, Roland S., 4,127,383, Cl. 422-5.000.
GSW Limited — GSW Limitee: *See—*
Tilton, Robert W., 4,127,101, Cl. 126-200.000.
GTE Automatic Electric Laboratories, Incorporated: *See—*
Stewart, James A., 4,127,746, Cl. 179-15.0FS.
GTE Laboratories Incorporated: *See—*
McKinzie, Howard, 4,127,466, Cl. 204-248.000.
Proud, Joseph M., Jr.; Norman, Scott L.; and Fallier, Charles N., Jr., 4,127,784, Cl. 307-311.000.
Quackenbush, Carr L. W.; Kolbeck, Andrew G.; and Klein, Richard M., 4,127,415, Cl. 106-47.00R.
GTE Sylvania Incorporated: *See—*
Goepel, Charles A., 4,127,893, Cl. 363-37.000.
Knoll, William C., 4,127,795, Cl. 315-210.000.
Guerrero, Benjamin G., to Mattel, Inc. Doll with pivotable head and puckering lips. 4,126,960, Cl. 46-118.000.
Guiliani, Giampaolo: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Guiliani, Giampaolo, 4,127,617, Cl. 260-878.00R.
Guilloton, Marcel: *See—*
Chamdru, Jacques; and Guilloton, Marcel, 4,127,159, Cl. 164-200.000.
Gulf & Western Manufacturing Company: *See—*
Jensen, James W.; and Miller, Stanley J., 4,127,023, Cl. 72-405.000.
Gully, Lanny L., to Remington Arms Company, Inc. Powder level inspection system with magnetic latching device. 4,127,054, Cl. 86-23.000.
Gummi-Henniges: *See—*
Henniges, Ernst, 4,127,278, Cl. 277-207.00R.
Gupta, Amitava: *See—*
Gray, Harry B.; Rembaum, Alan; and Gupta, Amitava, 4,127,506, Cl. 252-431.00N.
Gurgui, Constantin N.; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv I., to Intreprinderea "Bucuresti" Pentru Extragerea Prelucrarea si Montarea Marmurei si Pietrei de Constructii. Installation for producing a material for the finishing and decorating of the buildings. 4,127,433, Cl. 156-498.000.
Gutierrez, Louis F.: *See—*
Khoja, Mirza A.; Gutierrez, Louis F.; and Perone, John T., 4,127,231, Cl. 233-1.00R.
Guzi, John, Jr.; and Hart, William J., to Hercules Incorporated. Dry, water-dispersible pigment compositions. 4,127,422, Cl. 106-308.00Q.
Haar, Wilhelm: *See—*
Fischer, Wilfried; Kleinschmager, Herbert; Haar, Wilhelm; and Weddigen, Gert, 4,127,705, Cl. 429-104.000.
Habermehl, Fred M., III: *See—*
Murphy, Alan P.; and Habermehl, Fred M., III, 4,127,694, Cl. 428-245.000.
Hackemesser, Larry G.; and Petru, Robert B., to Pullman Incorporated. Exchanger reactor. 4,127,389, Cl. 422-201.000.
Halberschmidt, Friedrich: *See—*
Flemmer, Dieter; Halberschmidt, Friedrich; and Feiten, Karl-Josef, 4,127,683, Cl. 427-287.000.
Hall, Michael J.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,127,649, Cl. 424-177.000.
Hall, Richard A., to Willamette Industries, Inc. Asparagus box. 4,127,228, Cl. 229-16.00R.
Halle Industries, Inc.: *See—*
Tortorici, Domenic P.; and Tsengouras, Demetrios A., 4,127,396, Cl. 55-396.000.
Halliburton Company: *See—*
Cox, Bruce M.; and Gonzalez, Floyd A., 4,127,028, Cl. 73-194.00B.
Watson, Jimmie L.; and Totten, Patsy L., 4,127,482, Cl. 210-53.000.
Hamada, Masa: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,127,714, Cl. 536-17.000.
Hamano, Masaaki: *See—*
Yajima, Seishi; Shishido, Toetsu; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,127,411, Cl. 75-236.000.
Hammann, Ingeborg: *See—*
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,127,653, Cl. 424-200.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,127,652, Cl. 424-200.000.
Hancock, Norman L. Interlocking building block. 4,126,979, Cl. 52-594.000.
Hanson, Harry R.; Baugh, Hollis A.; Childers, Thomas W.; and Greer, James B., to Exxon Production Research Company. Well packers using metal to metal seals. 4,127,168, Cl. 166-123.000.
Harada, Susumu; and Endo, Kunio, to Nippondenso Co., Ltd. Fuel injection control system. 4,127,086, Cl. 123-32.0EL.

Harbison, William H.: *See*—
Mohnach, Michael G.; and Harbison, William H., 4,126,911, Cl. 15-250.420.
Hardie, George S.: *See*—
Capps, Charles P.; Hardie, George S.; Ludwig, Arthur C.; Maybell, Michael J.; and Wideman, Gary A., 4,127,857, Cl. 343-754.000.
Hardin, Gary L. Expandable beam structure. 4,126,974, Cl. 52-109.000.
Hardtmann, Goetz E.; and Coppola, Gary M., to Sandoz, Inc. 4-Hydroxy-3-sulfonyl-quinolin-2(1H)-ones. 4,127,574, Cl. 546-90.000.
Harris, Dominic R.; and Rowley, Lance E., to Pigment Manufacturers of Australia Limited. Comminution process and pigment. 4,127,420, Cl. 106-288.00Q.
Harrison, Brian; and Diwell, Alan F., to Johnson, Matthey & Co., Limited. Catalyst for the purification of an exhaust gas. 4,127,510, Cl. 252-462.000.
Hart, William J.: *See*—
Guzi, John, Jr.; and Hart, William J., 4,127,422, Cl. 106-308.00Q.
Hartman, George D.: *See*—
Tull, Roger J.; Hartman, George D.; and Weinstock, Leonard M., 4,127,721, Cl. 544-254.000.
Hasegawa, Yoshihisa: *See*—
Ueda, Shigeru; Yokoyama, Shinichi; Nakata, Yoshinori; Hasegawa, Yoshihisa; Yoshida, Ryoichi; Maekawa, Yousuke; Yoshida, Yuji; and Makino, Kazuo, 4,127,151, Cl. 141-5.000.
Hashiba, Shinji: *See*—
Ito, Hideo; and Hashiba, Shinji, 4,127,839, Cl. 337-408.000.
Hashimoto, Noritsugu; and Sasaki, Shigeo, to Hitachi Maxell, Ltd. Magnetic recording tape cartridge. 4,127,242, Cl. 242-199.000.
Hasimoto, Susumu, to Nissan Motor Company, Limited; and Kanto Seiki Company, Limited. Terminal pin holding block. 4,127,314, Cl. 339-59.00M.
Hassall, Cedric H.: *See*—
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,127,649, Cl. 424-177.000.
Hassler, Dieter, to Siemens Aktiengesellschaft. Apparatus for the measurement of flowing media according to the ultrasonic doppler method. 4,127,842, Cl. 340-3.00D.
Hattori, Kenichi: *See*—
Okada, Eizaburo; and Hattori, Kenichi, 4,127,417, Cl. 106-99.000.
Hattori, Mitsuhiro: *See*—
Kato, Kimio; Hattori, Mitsuhiro; and Sugiura, Tsuneo, 4,127,363, Cl. 417-269.000.
Hauck, Frederic P.; Reid, Joyce; Narayanan, Venkatachala L.; Cimarusti, Christopher M.; Haugwitz, Rudiger D.; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Diene intermediates for indantetrols. 4,127,578, Cl. 546-205.000.
Hauck, Frederic P.; Fox, Rita T.; and Watrous, John R., to E. R. Squibb & Sons, Inc. Substituted piperidinylpropanols. 4,127,579, Cl. 546-17.000.
Hauck, Frederic P.; and Reid, Joyce, to E. R. Squibb & Sons, Inc. Benzo-cyclitolamines. 4,127,717, Cl. 544-154.000.
Haugwitz, Rudiger D.; and Cruthers, Larry R., to E. R. Squibb & Sons, Inc. Method for treating blackhead disease. 4,127,664, Cl. 424-273.00R.
Haugwitz, Rudiger D.: *See*—
Hauck, Frederic P.; Reid, Joyce; Narayanan, Venkatachala L.; Cimarusti, Christopher M.; Haugwitz, Rudiger D.; and Sundeen, Joseph E., 4,127,578, Cl. 546-205.000.
Havalda, Paul, to Ciba-Geigy Corporation. Filtration system. 4,127,487, Cl. 210-350.000.
Hay, James V., to Du Pont de Nemours, E. I., and Company. Substituted carbamate intermediate. 4,127,605, Cl. 260-544.00C.
Hayashi, Midori: *See*—
Takemoto, Kiyochika; Suzuki, Yasuo; Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,127,125, Cl. 128-172.100.
Hayashi, Nobuyuki: *See*—
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, 4,127,553, Cl. 260-33.20R.
Heaney, James J., to Anthony's Manufacturing Company, Inc. Frangible door container. 4,127,188, Cl. 206-453.000.
Heaney, James J., to Anthony's Manufacturing Company, Inc. Anticondensation system for refrigerator doors. 4,127,765, Cl. 219-218.000.
Heersink, Evert J.; Birkenbach, Eugen J.; Brown, Daniel M.; and Schroeder, Thomas E., to International Harvester Company. Scraper mechanism for disk gang harrows. 4,127,179, Cl. 172-565.000.
Heidelberger Druckmaschinen AG: *See*—
Wirz, Arno; and Becker, Willi, 4,127,265, Cl. 271-260.000.
Hein, Wolfgang; Cosack, Claus; and Grundmann, Peter, to Carl Schleicher & Schull. Apparatus for the pressure impingement of a pressure filtration cell. 4,127,486, Cl. 210-219.000.
Heiss, Hermann: *See*—
Stockel, Dieter; Schneider, Friedrich; and Heiss, Hermann, 4,127,700, Cl. 428-558.000.
Heller, Adam; and Miller, Barry, to Bell Telephone Laboratories, Incorporated. Liquid-semiconductor junction photocells. 4,127,449, Cl. 204-2.100.
Heller, Hansjorg: *See*—
Rody, Jean; and Heller, Hansjorg, 4,127,586, Cl. 260-308.00B.
Heller, Milton D.: *See*—
Bernstein, Seymour; Lenhard, Robert H.; and Heller, Milton D., 4,127,602, Cl. 260-506.000.
Heller, Stephen M. Apparatus for interconnecting panels. 4,126,978, Cl. 52-461.000.
Hellier, Stephen J.; and Passoni, Anselmo G., to S.A.E.S. Getters S.p.A. Air-bakeable water-proof getter device and method of manufacturing same. 4,127,361, Cl. 417-48.000.
Henderson, Alan R., to Hughes Aircraft Company. CRT display anti-burn circuit. 4,127,796, Cl. 315-395.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Heyden, Rudi; Eckelt, Michael; Asbeck, Adolf; Hoffmeister, Jurgen; and Schmadel, Edmund, 4,127,512, Cl. 252-544.000.
Henniges, Ernst, to Gummi-Henniges. Elastic sealing ring for axle bearings of rail vehicles. 4,127,278, Cl. 277-207.00R.
Henning, Klaus: *See*—
Frers, Gerd; Nickel, Hans; and Henning, Klaus, 4,127,098, Cl. 123-185.0BA.
Henson, Ralph B., to Caterpillar Tractor Co. Method for lubricating turbocharged engines. 4,126,997, Cl. 60-605.000.
Henze, Thomas W.: *See*—
DeBolt, Harold E.; and Henze, Thomas W., 4,127,659, Cl. 427-249.000.
Herbert, Adolf; Brand, Wilhelm; and Dienst, Manfred, to Hermann Berstorff Maschinenbau GmbH. Twin screw extruders. 4,127,331, Cl. 366-83.000.
Herbstman, Sheldon: *See*—
Suggitt, Robert M.; and Herbstman, Sheldon, 4,127,471, Cl. 208-60.000.
Hercules Incorporated: *See*—
Ferrill, Richard M., Jr., 4,127,421, Cl. 106-298.000.
Guzi, John, Jr.; and Hart, William J., 4,127,422, Cl. 106-308.00Q.
Swinson, Robert C., 4,127,495, Cl. 252-89.00R.
Hermann Berstorff Maschinenbau GmbH: *See*—
Anders, Dietmar; Brand, Wilhelm; and Dienst, Manfred, 4,127,373, Cl. 425-192.00R.
Herbert, Adolf; Brand, Wilhelm; and Dienst, Manfred, 4,127,331, Cl. 366-83.000.
Hermann Rappold & Co. GmbH.: *See*—
Muller, Rudolf; Seeger, Josef; and Fink, Konrad, 4,127,257, Cl. 266-44.000.
Hewlett-Packard Company: *See*—
Gookin, Albert B., Jr.; Forbes, Vernal D.; and Venzke, Stephen B., 4,127,811, Cl. 324-130.000.
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.
Heyden, Rudi; Eckelt, Michael; Asbeck, Adolf; Hoffmeister, Jurgen; and Schmadel, Edmund, to Henkel Kommanditgesellschaft auf Aktien. Low-foaming washing agent compositions and foam inhibitor compositions. 4,127,512, Cl. 252-544.000.
Hi-Speed Checkweigher Co., Inc.: *See*—
Pettis, Charles R., Jr., 4,127,064, Cl. 101-93.180.
Hickman, Ronald P., to Inventec International Limited. Workbench with quick setting vise structure. 4,127,260, Cl. 269-139.000.
Higgins, David L., to Ag-Met, Inc. Film processing apparatus for the electrolytic recovery of silver. 4,127,465, Cl. 204-228.000.
Higgins, James Terence: *See*—
Pile, David S.; and Vernau, Alan J., 4,127,759, Cl. 219-56.000.
Higgins, Robert B.: *See*—
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Hill, John P., Jr.: *See*—
Zieg, Stanley W.; Hill, John P., Jr.; and McCrary, John S., 4,126,915, Cl. 19-111.000.
Hirakawa, Kazusa, to Accord Mech. Kabushiki Kaisha. Apparatus for reactivation of active carbon and the like. 4,127,737, Cl. 13-7.000.
Hirakawa, Koichi; Shibano, Takashi; and Masuda, Kazuo, to Matsushita Electric Industrial Co., Ltd. Method of insulating electromagnetic coils. 4,127,695, Cl. 428-371.000.
Hirano, Hiroshi; Kobayashi, Hiroshi; Jizaimaru, Jiro; and Shirasawa, Hidenori, to Kobe Steel, Ltd. Super mild steel having excellent workability and non-aging properties. 4,127,427, Cl. 148-36.000.
Hiraoka, Yuji; and Kageyama, Yodo, to Nippon Telegraph and Telephone Public Corporation. Type heads. 4,127,336, Cl. 400-144.200.
Hiroshima, Tatsuo; and Hirota, Tetsuya, to Sumitomo Metal Industries, Ltd. Method for balancing the sensitivity of two channels in a differential detection apparatus. 4,127,813, Cl. 324-202.000.
Hirota, Tetsuya: *See*—
Hiroshima, Tatsuo; and Hirota, Tetsuya, 4,127,813, Cl. 324-202.000.
Hirozawa, Stanley T.: *See*—
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Hitachi Chemical Company, Ltd.: *See*—
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, 4,127,553, Cl. 260-33.20R.
Hitachi Denshi Engineering Kabushiki Kaisha: *See*—
Ito, Yukio; and Morishima, Susumu, 4,126,982, Cl. 53-593.000.
Ito, Yukio; and Morishima, Susumu, 4,126,983, Cl. 53-593.000.
Hitachi, Ltd.: *See*—
Ichikawa, Norio; and Ueno, Sadayasu, 4,127,464, Cl. 204-195.00S.
Koyama, Masaharu; Ishibashi, Tadashi; and Tanaka, Hironari, 4,127,321, Cl. 350-336.000.
Nakamura, Tsutomu; and Koike, Ryuichi, 4,127,799, Cl. 318-373.000.
Tanaka, Toshio; Honda, Juichi; Mimori, Sadao; and Ikegami, Kazutoshi, 4,127,887, Cl. 361-86.000.
Hitachi Maxell, Ltd.: *See*—
Hashimoto, Noritsugu; and Sasaki, Shigeo, 4,127,242, Cl. 242-199.000.

Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
Ito, Takanori, 4,127,079, Cl. 114-74.00A.

Hochrein, Ambrose A., Jr.: *See—*
Thiruvengadam, Alagu P.; and Hochrein, Ambrose A., Jr., 4,127,332, Cl. 366-131.000.

Hockett, Wayne B. Abrasive cleaning apparatus. 4,126,970, Cl. 51-429.000.

Hoehn, Hans; Bernstein, Jack; and Vogt, Berthold R., to E. R. Squibb & Sons, Inc. Various 1,5,10,11-tetrahydrobenzo[4,5]cyclohepta[1,2-B]pyrazolo-[4,3-E]pyridine derivatives. 4,127,715, Cl. 542-404.000.

Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 4,127,655, Cl. 424-246.000.
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Hoff, Stephen J., to Hoffco, Inc. Method of making a shaft assembly. 4,126,928, Cl. 29-445.000.

Hoffco, Inc.: *See—*
Hoff, Stephen J., 4,126,928, Cl. 29-445.000.

Hoffmann-La Roche Inc.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,127,649, Cl. 424-177.000.
Chadha, Naresh K.; Partridge, John J., Jr.; and Uskokovic, Milan R., 4,127,736, Cl. 568-838.000.
Olson, Gary L.; and Saucy, Galbriel, 4,127,608, Cl. 260-567.60P.
Ramuz, Henri, 4,127,588, Cl. 260-327.00M.

Hoffmann, Tivadar. Supplemental window. 4,126,965, Cl. 49-398.000.

Hoffmeister, Jurgen: *See—*
Heyden, Rudi; Eckelt, Michael; Asbeck, Adolf; Hoffmeister, Jurgen; and Schmadel, Edmund, 4,127,512, Cl. 252-544.000.

Holick, Hubert: *See—*
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Holland Mechanics B.V.: *See—*
Damman, Cornelis C., 4,126,942, Cl. 33-203.120.

Hollaway, Gerald C., Jr., to Dayco Corporation. Endless power transmission belt. 4,127,039, Cl. 74-232.000.

Holleck, Gerhard L., to EIC Corporation. Nickel-hydrogen secondary battery. 4,127,703, Cl. 429-57.000.

Hollis Engineering, Inc.: *See—*
Boynton, Kenneth G., 4,127,692, Cl. 428-137.000.

Holt, John F. D. Simulated stained glass articles. 4,127,689, Cl. 428-38.000.

Homeyer, Bernhard: *See—*
Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,127,653, Cl. 424-200.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 4,127,652, Cl. 424-200.000.

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Honda, Juichi: *See—*
Tanaka, Toshio; Honda, Juichi; Mimori, Sadao; and Ikegami, Kazutoshi, 4,127,887, Cl. 361-86.000.

Honeywell Farms, Inc.: *See—*
Virog, John J., Jr.; Von Hagel, Leo; and Platte, Richard L., 4,127,206, Cl. 215-1.00C.

Honeywell Information Systems Inc.: *See—*
Negi, Virendra S.; and Miu, Ming T., 4,127,768, Cl. 235-304.100.

Hoppe, Udo: *See—*
Klier, Manfred; Hoppe, Udo; and Schritt, Wolfgang, 4,127,672, Cl. 424-311.000.

Horne, Merton A.; and Pogemiller, Thomas A., to Sperry Rand Corporation. MNOS FET memory retention characterization test circuit. 4,127,901, Cl. 365-205.000.

Horton, Douglas P. M. T T improvements relating to clothes. 4,126,903, Cl. 2-409.000.

Hottinger, Conrad; Ruppen, Bruno; Bohler, Pierre; and Singenberger, Emil, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Cartridge feed system for an automatic gun. 4,127,055, Cl. 89-33.00D.

Houdaille Industries, Inc.: *See—*
Wright, Wyman J., 4,127,279, Cl. 279-1.0TS.

House, J. Hardy, to Conrac Corporation. Solid state force transducer. 4,127,840, Cl. 338-4.000.

Howe, Milton A., Jr.: *See—*
Bieler, Anne C.; and Howe, Milton A., Jr., 4,127,688, Cl. 428-36.000.

Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyoda Chemical Engineering & Construction Co., Ltd. Method for the thermal cracking of heavy oil. 4,127,473, Cl. 208-130.000.

Hsieh, Henry L., to Phillips Petroleum Company. Copolymerization of a 1,3-cyclodiene and a linear conjugated diene. 4,127,710, Cl. 526-133.000.

H··ber, Calvin O.: *See—*
Schick, Karl G.; and Huber, Calvin O., 4,127,448, Cl. 204-1.00T.

Huber, Joel E.: *See—*
Beaton, John M.; Huber, Joel E.; Padilla, Amphlett G.; and Breuer, Max E., 4,127,596, Cl. 260-397.300.

Hubert, Guy; and Vandenhove, Charles, to Societe Bourguignonne d'Applications Plastiques. Stackable plastic bottles. 4,127,207, Cl. 215-1.00C.

Huck Manufacturing Company: *See—*
Angelosanto, Donald J.; and Kendall, James W., 4,127,345, Cl. 403-388.000.

Hudyma, Thomas W.: *See—*
Juby, Peter F.; Hudyma, Thomas W.; and Partyka, Richard A., 4,127,720, Cl. 544-252.000.

Hughes Aircraft Company: *See—*
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Jacobson, Alexander D.; Grinberg, Jan; Sprotbery, Donald E.; and Boswell, Donald D., 4,127,322, Cl. 353-31.000.
Keller, Leon B.; and Jenkins, Robert K., 4,127,624, Cl. 264-23.000.
Sato, Robert N., 4,127,781, Cl. 250-562.000.

Hunter Engineering Company: *See—*
Senften, David A., 4,126,943, Cl. 33-228.000.

Huntington Institute of Applied Medical Research: *See—*
Bullara, Leo A., 4,127,110, Cl. 128-2.00P.

Hurst, Philip F.; and Derry, Jasper, to Becton, Dickinson & Company. Sensitivity disc dispenser with tamper mechanism. 4,127,217, Cl. 221-94.000.

Husky, Glover A., to Allied Products Corp. Field to cotton gin handling and storage systems. 4,127,061, Cl. 100-100.000.

Hy-Way Heat Systems, Inc.: *See—*
Miller, William F., 4,127,478, Cl. 209-240.000.

Hydorn, Dennis H. Waterproof bag with waterproof divider. 4,127,155, Cl. 150-1.700.

Iannadrea, Gerald: *See—*
Gorgone, Robert L.; Iannadrea, Gerald; and Kovach, Alan J., 4,127,328, Cl. 356-71.000.

Iannazzi, Fred D., to Iannazzi, Fred D.; and Crowley, Richard P. Air-classification apparatus and process for the segregation of mixed office-paper waste. 4,127,476, Cl. 209-3.000.

Ibaraki, Satoru: *See—*
Atoji, Nobuhisa; Naono, Hiroyuki; Yamamoto, Hiroshi; and Ibaraki, Satoru, 4,127,749, Cl. 179-110.00A.

Ibex Inking Systems, Inc.: *See—*
Bishop, John W. H., 4,127,337, Cl. 400-202.400.

Ibsen, Knud. Safety lock. 4,127,016, Cl. 70-92.000.

Ichida, Toshio; and Komatsubara, Michiro, to Kawasaki Steel Corporation. Forsterite insulating films formed on surface of a grain-oriented silicon steel sheet having a high magnetic induction and a method of forming the same. 4,127,429, Cl. 148-113.000.

Ichigaya, Hiroshi, to Sony Corporation. Signal generating system utilizing a cathode ray tube. 4,127,049, Cl. 84-1.180.

Ichikawa, Norio; and Ueno, Sadayasu, to Hitachi, Ltd. Sensor for detecting oxygen concentration. 4,127,464, Cl. 204-195.00S.

Ideal Industries, Inc.: *See—*
Peplow, Marvin J.; and Wells, Peter M., Jr., 4,127,807, Cl. 324-51.000.
Purland, Donald A., 4,127,810, Cl. 324-99.00D.

Ikeda, Toshikazu: *See—*
Ushitani, Kenji; Noda, Fumiyoshi; and Ikeda, Toshikazu, 4,127,556, Cl. 252-62.000.

Ikegami, Kazutoshi: *See—*
Tanaka, Toshio; Honda, Juichi; Mimori, Sadao; and Ikegami, Kazutoshi, 4,127,887, Cl. 361-86.000.

Ikegami, Tadashi: *See—*
Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, 4,127,590, Cl. 260-346.740.

Ilegems, Marc; Koszi, Louis A.; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Integrated optical detectors. 4,127,862, Cl. 357-30.000.

Illinois Tool Works Inc.: *See—*
Rayburn, Charles C., 4,127,890, Cl. 361-309.000.
Rayburn, Charles C., 4,127,891, Cl. 361-309.000.

Illy, Hugo; and Fussenegger, Werner, to Ciba-Geigy Corporation. Tris-tetrazoles as chemical blowing agents. 4,127,718, Cl. 544-222.000.

Imazaike, Mikiharu. Gear for precision devices. 4,127,041, Cl. 74-411.000.

Imperial Chemical Industries Limited: *See—*
Addleman, Robert L., 4,127,633, Cl. 264-97.000.
Alexander, John H., 4,127,548, Cl. 260-29.2TN.
Martin, Graham E.; Cockshott, Ian D.; and McAloon, Kevin T., 4,127,706, Cl. 429-122.000.

Inaba, Naomi: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokuo; and Wada, Shozo, 4,127,504, Cl. 252-429.00B.
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokyo; and Wada, Shozo, 4,127,505, Cl. 252-429.00B.

Indigrade Limited: *See—*
Roberts, John, 4,127,348, Cl. 404-16.000.

Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, to Kao Soap Co., Ltd. Compositions and methods containing beta substituted allyl alcohols, sulfuric acid esters thereof, phosphoric acid esters thereof, alkanoyl esters thereof and alkylene oxide ethers thereof. 4,127,654, Cl. 424-216.000.

Inoue, Yoshiaki: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,127,503, Cl. 252-429.00R.

Instytut Chemii Przemslowej: *See—*
Wlodarski, Andrzej; Draminska, Krystyna; Oplotny, Wladyslaw; Mickiewicz, Andrzej; and Komar, Michal, 4,127,333, Cl. 366-131.000.

International Audio Visuai Hong Kong: *See—*
Dyck, Arthur, 4,127,239, Cl. 242-55.19A.

International Business Machines Corporation: *See—*
Babcock, Thomas C.; Ellis, Theron LaR.; and Majka, Henry C., 4,127,438, Cl. 156-666.000.
Dachtera, William R., 4,127,899, Cl. 365-154.000.

Deneuville, Alain F. G., 4,127,861, Cl. 357-15.000.
International Environmental Mfg. Corp.: *See*—
Braver, Alvin S., 4,127,162, Cl. 165-50.000.
International Harvester Company: *See*—
Heersink, Evert J.; Birkenbach, Eugen J.; Brown, Daniel M.; and Schroeder, Thomas E., 4,127,179, Cl. 172-565.000.
International Nickel Company, Inc., The: *See*—
Merrick, Howard F.; and Curwick, LeRoy R., 4,127,410, Cl. 75-171.000.
International Telephone and Telegraph Corporation: *See*—
Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, 4,127,742, Cl. 179-18.0FC.
Interroll Fordertechnik GmbH & Co. K.G.: *See*—
Baader, Helmut, 4,127,770, Cl. 235-474.000.
Intra-Pipe, Inc.: *See*—
Jones, Garnett E., 4,126,969, Cl. 51-411.000.
Intreprinderea "Bucuresti" Pentru Extragerea Prelucrarea si Montarea Marmurei si Pietrei de Constructii: *See*—
Gurgui, Constantin N.; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv I., 4,127,433, Cl. 156-498.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,127,714, Cl. 536-17.000.
Inventec International Limited: *See*—
Hickman, Ronald P., 4,127,260, Cl. 269-139.000.
Iota Engineering, Inc.: *See*—
Perper, Lloyd J., 4,127,797, Cl. 315-209.00R.
Isaev, Oleg V.: *See*—
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.
Ishibashi, Tadashi: *See*—
Koyama, Masaharu; Ishibashi, Tadashi; and Tanaka, Hironari, 4,127,321, Cl. 350-336.000.
Ishihara, Masao; Kobayashi, Ryoichiro; Usui, Tugumoto; and Omura, Takayoshi, to Konishiroku Photo Industry Co., Ltd. Method for the addition of photographic addenda. 4,127,413, Cl. 96-56.000.
Ishihara, Yasuo: *See*—
Morishita, Masanobu; and Ishihara, Yasuo, 4,127,877, Cl. 358-213.000.
Ishino, Yoshio: *See*—
Watanabe, Sumio; Mizuno, Yasuhiko; Kayano, Masanori; and Ishino, Yoshio, 4,127,622, Cl. 264-13.000.
Ishizuka, Masaaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,127,714, Cl. 536-17.000.
Isoi, Toshihiro: *See*—
Ohya, Tokuji; and Isoi, Toshihiro, 4,127,707, Cl. 429-149.000.
Ito, Hideo; and Hashiba, Shinji. Thermal switch. 4,127,839, Cl. 337-408.000.
Ito, Takanori, to Hitachi Shipbuilding & Engineering Co., Ltd. Support device for ship-carried independent tank. 4,127,079, Cl. 114-74.00A.
Ito, Yukio; and Morishima, Susumu, to Hitachi Denshi Engineering Kabushiki Kaisha; and Musashi Kabushiki Kaisha. Apparatus for binding a stack of paper sheets. 4,126,982, Cl. 53-593.000.
Ito, Yukio; and Morishima, Susumu, to Hitachi Denshi Engineering Kabushiki Kaisha; and Musashi Kabushiki Kaisha. Binding tape dealing apparatus for paper bundle binding apparatus. 4,126,983, Cl. 53-593.000.
Itoh, Akihiko: *See*—
Shimizu, Shigeo; and Itoh, Akihiko, 4,127,698, Cl. 428-373.000.
ITW — Illinois Tool Works: *See*—
Swick, Edwin G., 4,127,250, Cl. 248-71.000.
Iwasawa, Mineo; Sakaue, Tatsuo; Date, Hikaru; and Takamatsu, Takehiro, to Tokyo Shibaura Electric Co., Ltd.; and Nippon Hoso Kyokai. Apparatus for removing ghost signals from received video signals. 4,127,874, Cl. 358-167.000.
Izumiyama, Masao; Kagawa, Naohiko; and Satoh, Kenji, to Japan Gasoline Co., Ltd. Stainless cast alloy steel for use at low temperatures. 4,127,428, Cl. 148-38.000.
J. I. Case Company: *See*—
Keller, Lynn L.; and Thiele, Duane L., 4,127,204, Cl. 214-394.000.
J. M. Voith G.m.b.H.: *See*—
Kurth, Klaus; Tra, Josef; and Lorenz, Werner, 4,127,479, Cl. 209-273.000.
J.U.W. Muller, Maschinen und Amaturenfabrik GmbH: *See*—
Jacobs, Hans, 4,127,256, Cl. 266-57.000.
Jackson, Edward L. Combination portable and stationary, bench-mounted chain saw apparatus. 4,127,046, Cl. 83-798.000.
Jackson, Lynden A., to Post Office, The. Apparatus for forming dielectric optical waveguides. 4,127,370, Cl. 425-71.000.
Jacobs, David R.: *See*—
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,127,078, Cl. 112-266.000.
Jacobs, Gunter: *See*—
Alewelt, Wolfgang; Jacobs, Gunter; Margotte, Dieter; and Lux, Erich, 4,127,561, Cl. 528-199.000.
Jacobs, Hans, to J.U.W. Muller, Maschinen und Amaturenfabrik GmbH. Flame-cutting apparatus. 4,127,256, Cl. 266-57.000.
Jacobson, Alexander D.; Grinberg, Jan; Sprotbery, Donald E.; and Boswell, Donald D., to Hughes Aircraft Company. High brightness full color image light valve projection system. 4,127,322, Cl. 353-31.000.
Jacobson, Gunnar; Jarnholt, Per-Erik; Lindholm, Erik H.; and Olsson, Olof B., to Aktiebolaget Bofors. Device for a missile or the like. 4,127,243, Cl. 244-3.210.
Jacuzzi Bros. Incorporated: *See*—
Jacuzzi, Virgil, 4,126,925, Cl. 29-428.000.
Jacuzzi, Virgil, to Jacuzzi Bros. Incorporated. Skimmer assembly. 4,126,925, Cl. 29-428.000.
Jaeger, Peter: *See*—
Schulz, Bernhard; Grassner, Hans; Jaeger, Peter; and Nohe, Heinz, 4,127,455, Cl. 204-78.000.
Jagenberg-Werke AG: *See*—
Zodrow, Rudolf, 4,127,435, Cl. 156-568.000.
James Neill Holdings Limited: *See*—
Barlow, Peter, 4,126,967, Cl. 51-219.00R.
Japan Foundation for Artificial Organs: *See*—
Malchesky, Paul S.; and Nose, Yukihiko, 4,127,481, Cl. 210-22.00A.
Japan Gasoline Co., Ltd.: *See*—
Izumiyama, Masao; Kagawa, Naohiko; and Satoh, Kenji, 4,127,428, Cl. 148-38.000.
Jarnholt, Per-Erik: *See*—
Jacobson, Gunnar; Jarnholt, Per-Erik; Lindholm, Erik H.; and Olsson, Olof B., 4,127,243, Cl. 244-3.210.
Jasper, Lane. Combined kerfing and joint nailing machine. 4,127,226, Cl. 227-69.000.
Jenkins, Robert K.: *See*—
Keller, Leon B.; and Jenkins, Robert K., 4,127,624, Cl. 264-23.000.
Jennings, Frederick R.; and Moritz, James O. True tracking trailer. 4,127,202, Cl. 214-85.000.
Jenoptik Jena G.m.b.H.: *See*—
Lauenroth, Gerhard; and Papenkordt, Lutz, 4,127,779, Cl. 250-558.000.
Jensen, Cornelius. Teaching appliances for programmed teaching. 4,126,950, Cl. 35-48.00R.
Jensen, Donald D. Hood assembly. 4,127,106, Cl. 126-299.00D.
Jensen, James R.: *See*—
Klank, Benno E. O.; and Jensen, James R., 4,127,103, Cl. 126-271.000.
Jensen, James W.; and Miller, Stanley J., to Gulf & Western Manufacturing Company. Article transfer mechanism. 4,127,023, Cl. 72-405.000.
Jensen, Niels C., Jr.: *See*—
McKey, Paul M.; and Jensen, Niels C., Jr., 4,127,395, Cl. 55-20.000.
Jensen, Ronald P.: *See*—
Fourney, Michael E.; and Jensen, Ronald P., 4,127,109, Cl. 128-1.00R.
Jitsugiri, Yukio: *See*—
Yamabe, Masaaki; Munekata, Seiji; Sugaya, Yoshio; and Jitsugiri, Yukio, 4,127,731, Cl. 560-192.000.
Jizaimaru, Jiro: *See*—
Hirano, Hiroshi; Kobayashi, Hiroshi; Jizaimaru, Jiro; and Shirasawa, Hidenori, 4,127,427, Cl. 148-36.000.
JLG Industries, Inc.: *See*—
Coffman, Allen B., 4,127,180, Cl. 180-6.480.
Jochems, Pieter J. W., to U.S. Philips Corporation. Semiconductor device. 4,127,864, Cl. 357-44.000.
Joffe, Kenneth L., to Wynn Oil Company. Flushing of liquid circulation systems. 4,127,160, Cl. 165-1.000.
John D. Hollingsworth on Wheels, Inc.: *See*—
Zieg, Stanley W.; Hill, John P., Jr.; and McCrary, John S., 4,126,915, Cl. 19-111.000.
John Wyeth & Brother Limited: *See*—
Boyle, John T. A., 4,127,660, Cl. 424-249.000.
Cavalla, John F., 4,127,663, Cl. 424-270.000.
Johnson, Andrew L. Tube flaring set. 4,127,021, Cl. 72-313.000.
Johnson, Clark E., Jr.; and Johnson, Eugene P., to Micro Communications Corporation. Magnetic tape recorder/reproducer for ratio recording with synchronized internal and external clock rates. 4,127,878, Cl. 360-51.000.
Johnson, Curtis C.: *See*—
Westenskow, Dwayne R.; and Johnson, Curtis C., 4,127,121, Cl. 128-142.00R.
Johnson, Eugene P.: *See*—
Johnson, Clark E., Jr.; and Johnson, Eugene P., 4,127,878, Cl. 360-51.000.
Johnson & Johnson: *See*—
Vaillancourt, Vincent L., 4,127,131, Cl. 128-221.000.
Johnson, Matthey & Co., Limited: *See*—
Harrison, Brian; and Diwell, Alan F., 4,127,510, Cl. 252-462.000.
Johnson, Milton H. High torque stepping motor. 4,127,802, Cl. 318-696.000.
Johnson, Ralph E., to Singer Company, The. Needle bar frame for a sewing machine. 4,127,076, Cl. 112-158.00R.
Johnson, Tore R.: *See*—
Forney, Edgar W., Jr.; Johnson, Tore R.; and O'Keefe, Michael F., 4,127,319, Cl. 350-96.200.
Johnson, W. Grant. Closing attachment kit for sliding door and anti-friction support. 4,126,912, Cl. 16-81.000.
Johnson, William R., Jr.: *See*—
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,127,601, Cl. 260-463.000.
Johnston, F. Bertram; and Grybek, Roland S., to Graham-White Sales Corporation. Foaming waste treatment composition and method for treating nitrogenous waste material therewith. 4,127,383, Cl. 422-5.000.

Jones, Garnett E., to Intra-Pipe, Inc. Arrangement for cleaning a conduit. 4,126,969, Cl. 51-411.000.

Joo', Louis A., to Great Lakes Carbon Corporation. Sulfur/graphite fiber electrode for sodium-sulfur batteries. 4,127,634, Cl. 264-105.000.

Josemans, Leonardus J.; and Swessel, John A., Jr., to Cutler-Hammer, Inc. Pivoting and sliding contactors and operating member therefor in electric switches. 4,127,754, Cl. 200-67.00G.

Joseph Crosfield and Sons Limited: *See—*
Aldcroft, Derek; Barby, Donald; Lovell, Anthony L.; and Quinn, James P., 4,127,641, Cl. 423-339.000.

Joshi, Ashok V.: *See—*
Liang, Charles C.; Joshi, Ashok V.; and Barnette, Luverne H., 4,127,708, Cl. 429-191.000.

Jost, Rudiger: *See—*
Kostlin, Heiner; Jost, Rudiger; and Auding, Hans, 4,127,789, Cl. 313-112.000.

Jovic, Nicola L.: *See—*
Couturier, Gordon W.; Jovic, Nicola L.; Aymeloglu, Simeon; Bartholomay, William G.; Winn, Melvin; and Ghosh, Suhas, 4,127,742, Cl. 179-18.0FC.

Juby, Peter F.; Hudyma, Thomas W.; and Partyka, Richard A., to Bristol-Myers Company. Pyrimido[2,1-a]isoquinoline derivatives having antiallergy activity. 4,127,720, Cl. 544-252.000.

Judd, Myles A.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.

Jumer, John F. Method and apparatus for incremental electro-polishing. 4,127,459, Cl. 204-129.500.

Junkin, James H.: *See—*
Bersin, Richard L.; Junkin, James H.; and Reichelderfer, Richard F., 4,127,437, Cl. 156-635.000.

Kabotoff, Lionel W. Tree harvesting apparatus. 4,127,154, Cl. 144-3.00D.

Kabushiki Kaisha Daini Seikosha: *See—*
Yasuda, Kazumasa, 4,126,992, Cl. 58-88.00B.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kato, Kimio; Hattori, Mitsuhiro; and Sugiura, Tsuneo, 4,127,363, Cl. 417-269.000.

Kagawa, Naohiko: *See—*
Izumiyama, Masao; Kagawa, Naohiko; and Satoh, Kenji, 4,127,428, Cl. 148-38.000.

Kageyama, Yodo: *See—*
Hiraoka, Yuji; and Kageyama, Yodo, 4,127,336, Cl. 400-144.200.

Kahan, Ghetel P. Concrete building construction forms. 4,127,254, Cl. 249-22.000.

Kaijo Denki Kabushiki Kaisha: *See—*
Takemoto, Kiyochika; Suzuki, Yasuo; Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,127,125, Cl. 128-172.100.

Kaiser Aerospace & Electronics Corporation: *See—*
Morrison, Donald L., 4,127,215, Cl. 220-314.000.

Kaizerman, Samuel; and Singh, Ajaib, to American Cyanamid Company. Stabilization of polyester urethanes using organic epoxides. 4,127,542, Cl. 260-18.0PF.

Kakiuchi, Motoo: *See—*
Kato, Yasuo; Kakiuchi, Motoo; Arai, Takashi; and Okawa, Kunio, 4,127,841, Cl. 338-128.000.

Kamimura, Shigeo; and Otaki, Tadaaki, to Mitsubishi Chemical Industries Ltd. Method of producing maleic anhydride. 4,127,591, Cl. 260-346.750.

Kaminaka, Nobuyuki: *See—*
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,127,884, Cl. 360-119.000.

Kanai, Kenji: *See—*
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,127,884, Cl. 360-119.000.

Kangol Magnet Limited: *See—*
Kell, John, 4,127,240, Cl. 242-107.40A.

Kanojia, Ramesh M.: *See—*
Chen, Robert H. K.; and Kanojia, Ramesh M., 4,127,651, Cl. 424-195.000.

Kanto Seiki Company, Limited: *See—*
Hasimoto, Susumu, 4,127,314, Cl. 339-59.00M.

Kao Soap Co., Ltd.: *See—*
Amano, Haruyuki; and Nakano, Akira, 4,127,679, Cl. 426-565.000.
Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, 4,127,654, Cl. 424-216.000.
Okada, Eizaburo; and Hattori, Kenichi, 4,127,417, Cl. 106-99.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Disposable diaper with unitary tape fastener. 4,127,132, Cl. 128-287.000.

Kart, Frederick H., to Kart Sporting Arms Corporation. Automatic pistol barrel locking device and sub-caliber conversion therefor. 4,127,056, Cl. 89-128.000.

Kart Sporting Arms Corporation: *See—*
Kart, Frederick H., 4,127,056, Cl. 89-128.000.

Kasai, Shozo: *See—*
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, 4,127,553, Cl. 260-33.20R.

Kaseda, Mikio: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; Kusabe, Kouji; and Kaseda, Mikio, 4,127,595, Cl. 260-352.000.

Kashihara, Takao: *See—*
Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, 4,127,590, Cl. 260-346.740.

Kashio, Toshio, to Casio Computer Co., Ltd. Data read-write apparatus for a magnetic recording medium. 4,127,879, Cl. 360-51.000.

Kastin, Abba J.: *See—*
Coy, David H.; and Kastin, Abba J., 4,127,517, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,518, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,519, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,520, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,521, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,522, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,523, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,524, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,525, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,526, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,527, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,528, Cl. 260-8.000.
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Coy, David H.; and Kastin, Abba J., 4,127,530, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,531, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,532, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,533, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,534, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,535, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,536, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,537, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,538, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,539, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,540, Cl. 260-8.000.
Coy, David H.; and Kastin, Abba J., 4,127,541, Cl. 260-8.000.

Katagi, Kazuo, to RCA Corporation. Image resolution enhancement method and apparatus. 4,127,873, Cl. 358-166.000.

Katchman, Arthur: *See—*
Cooper, Glenn D.; and Katchman, Arthur, 4,127,558, Cl. 260-42.180.

Kato, Kimio; Hattori, Mitsuhiro; and Sugiura, Tsuneo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash-plate type compressor. 4,127,363, Cl. 417-269.000.

Kato, Yasuo; Kakiuchi, Motoo; Arai, Takashi; and Okawa, Kunio, to Toshiba Kikai Kabushiki Kaisha. Multi-direction controlling mechanism. 4,127,841, Cl. 338-128.000.

Katz, Donald J.: *See—*
Katz, Wilfred L.; and Katz, Donald J., 4,127,085, Cl. 122-18.000.

Katz, Wilfred L.; and Katz, Donald J. Automatic hot water heater. 4,127,085, Cl. 122-18.000.

Kawabata, Nobuo, to Sharp Kabushiki Kaisha. Wiper roller for drying a wet sheet in a copying machine. 4,127,082, Cl. 118-652.000.

Kawai, Kiyoshi: *See—*
Matsushima, Shunsuke; and Kawai, Kiyoshi, 4,127,623, Cl. 264-13.000.

Kawasaki Kasei Chemicals Ltd.: *See—*
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; Kusabe, Kouji; and Kaseda, Mikio, 4,127,595, Cl. 260-352.000.

Kawasaki Steel Corporation: *See—*
Ichida, Toshio; and Komatsubara, Michiro, 4,127,429, Cl. 148-113.000.

Kayano, Hideo: *See—*
Yajima, Seishi; Shishido, Toetsu; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,127,411, Cl. 75-236.000.

Kayano, Masanori: *See—*
Watanabe, Sumio; Mizuno, Yasuhiko; Kayano, Masanori; and Ishino, Yoshio, 4,127,622, Cl. 264-13.000.

Kayhko, Jussi J.: *See—*
Klaile, Borje E. W.; Kayhko, Jussi J.; and Rosenberg, Eino A., 4,127,235, Cl. 241-1.000.

Keane, William J. Frequency discriminator apparatus. 4,127,819, Cl. 325-423.000.

Kell, John, to Kangol Magnet Limited. Acceleration-sensing mechanism. 4,127,240, Cl. 242-107.40A.

Keller, Leon B.; and Jenkins, Robert K., to Hughes Aircraft Company. Process for producing novel polymeric fibers and fiber masses. 4,127,624, Cl. 264-23.000.

Keller, Lynn L.; and Thiele, Duane L., to J. I. Case Company. Centering means for spreader supported on beams. 4,127,204, Cl. 214-394.000.

Kendall, James W.: *See—*
Angelosanto, Donald J.; and Kendall, James W., 4,127,345, Cl. 403-388.000.

Kendall-Smith, Brian J.; Parker, Fredrick J.; and Nicklin, Norman B., to British Industrial Plastics Limited. Pigmentation of plastics moulding material. 4,127,555, Cl. 260-37.00N.

Kennametal Inc.: *See—*
Montgomery, Robert H., Jr.; and Evans, Raymond D., Jr., 4,127,000, Cl. 405-261.000.

Kenyon, Alan. For sawing and for controlling the sawing process. 4,127,044, Cl. 83-446.000.

Kesten, Stephen J.: *See—*
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,127,585, Cl. 260-307.00H.

Khirdzhiev, Sergei G.: *See—*
Vasilkovsky, Vitaly P.; Koires, Vladimir I.; Khirdzhiev, Sergei G.; and Chekmenev, Viktor I., 4,127,019, Cl. 72-21.000.

Khoja, Mirza A.; Gutierrez, Louis F.; and Perone, John T., to Baxter Travenol Laboratories, Inc. Support arm for centrifugal liquid processing apparatus. 4,127,231, Cl. 233-1.00R.

Kidd, Earl H., to Outboard Marine Corporation. Grass collection bag for rotary lawn mower. 4,126,986, Cl. 56-202.000.

Kienhofer, Manfred; and Pedrerol, Johann, to Gesellschaft fur Kernforschung GmbH. Breathing apparatus. 4,127,122, Cl. 128-142.500.
Kikuchi, Hideo: *See—*
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.
Kikuchi, Takeshi; and Mizunaga, Shinji, to Nissan Motor Company, Limited. Weft yarn guide. 4,127,149, Cl. 139-435.000.
Kim, Leo; and Tang, Sunny C., to Shell Oil Company. Epichlorohydrin purification process. 4,127,593, Cl. 260-348.370.
Kim, Leo: *See—*
Anderson, Elmer A.; Kim, Leo; and Tang, Sunny C., 4,127,594, Cl. 260-348.370.
Kim, Seung K., to General Electric Company. VIR hue control system. 4,127,867, Cl. 358-28.000.
Kimbell, Charles L. Periodic sampling concentration indicator. 4,127,780, Cl. 250-559.000.
King, Henry L.; and Wu, Chester C., to Monsanto Company. Process for making fiber-forming polyesters. 4,127,565, Cl. 528-283.000.
King, Henry L.; and Wu, Chester C., to Monsanto Company. Process for preparation of flame retardant polyesters. 4,127,566, Cl. 528-283.000.
King Instrument Corporation: *See—*
King, James L., 4,127,225, Cl. 226-118.000.
King, James L., to King Instrument Corporation. Tape storage bin. 4,127,225, Cl. 226-118.000.
King, Percy, to FBM International, Inc. Semi-automatic carton forming, filling, and sealing machine. 4,126,981, Cl. 53-565.000.
Kinoshita, Shouzo, to Pioneer Electronic Corporation. Loudspeaker with rigid foamed back-cavity. 4,127,751, Cl. 179-180.000.
Kirstein, Bruce E.: *See—*
Norman, John H.; Roemer, Thomas S.; Kirstein, Bruce E.; and Mysels, Karol J., 4,127,644, Cl. 423-648.00R.
Kissick, Thomas P.: *See—*
Wade, Peter C.; and Kissick, Thomas P., 4,127,587, Cl. 260-308.00R.
Kitaichi, Satoshi: *See—*
Kuwano, Satoshi; Yabuzaki, Shun-ichi; Kitaichi, Satoshi; Takesawa, Seiichi; Minabe, Hitoshi; and Nakamura, Tsuneshi, 4,127,432, Cl. 156-297.000.
Klaile, Borje E. W.; Kayhko, Jussi J.; and Rosenberg, Eino A., to Outokumpu Oy. Process for producing pulverous selenium from raw selenium. 4,127,235, Cl. 241-1.000.
Klank, Benno E. O.; and Jensen, James R. Heat collecting and transferring apparatus and systems adapted for use with solar energy. 4,127,103, Cl. 126-271.000.
Klauminzer, Gary K., to Molectron Corporation. Optical beam expander for dye laser. 4,127,828, Cl. 331-94.50C.
Klein, Hans P.; and Menth, Anton, to BBC Brown, Boveri & Company, Limited. Ceramic electrical resistor with nonlinear voltage characteristic. 4,127,511, Cl. 252-518.000.
Klein, Richard M.: *See—*
Quackenbush, Carr L. W.; Kolbeck, Andrew G.; and Klein, Richard M., 4,127,415, Cl. 106-47.00R.
Kleinschmager, Herbert: *See—*
Fischer, Wilfried; Kleinschmager, Herbert; Haar, Wilhelm; and Weddigen, Gert, 4,127,705, Cl. 429-104.000.
Klier, Manfred; Hoppe, Udo; and Schritt, Wolfgang, to Beiersdorf Aktiengesellschaft. Insect repellants. 4,127,672, Cl. 424-311.000.
Kline, Richard L.: *See—*
Berst, Albert H.; Kline, Richard L.; Medcalf, William A.; Onnen, James H.; and Schupp, Philipp P., 4,127,621, Cl. 261-118.000.
Klockner Humboldt Deutz Aktiengesellschaft: *See—*
Weigel, Horst; Melcher, Gerhard; and Wuth, Wolfgang, 4,127,408, Cl. 75-76.000.
Kloth, James A., deceased: *See—*
Fleischhacker, James E.; Wasserlein, Henry G., Jr.; and Kloth, James A., deceased, 4,127,312, Cl. 339-99.00R.
Kloth, Marion L., administrator: *See—*
Fleischhacker, James E.; Wasserlein, Henry G., Jr.; and Kloth, James A., deceased, 4,127,312, Cl. 339-99.00R.
Kluender, Harold C.; and Woessner, Warren D., to Miles Laboratories, Inc. 19-Hydroxy PGE_1 carbinol analogues. 4,127,612, Cl. 260-586.00R.
Kluender, Harold C., to Miles Laboratories, Inc. Dependyl analogues of 11-deoxy-prostaglandin E_2. 4,127,727, Cl. 560-121.000.
Knarr, John E.: *See—*
Clyne, Arthur J.; Knarr, John E.; and Miller, Stanley, 4,127,161, Cl. 165-34.000.
Kniep, Joris. Device for vibrating the soil. 4,126,999, Cl. 405-258.000.
Knoche, Wilhelm; and Wiese, Gottfried, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Optical pressure jump relaxation detector. 4,127,330, Cl. 356-246.000.
Knoll, William C., to GTE Sylvania Incorporated. Lamp ballast circuit. 4,127,795, Cl. 315-210.000.
Knutson, Dale A., to Dynex/Rivett Inc. Electromechanical force motor. 4,127,835, Cl. 335-266.000.
Kobayashi, Hiroshi: *See—*
Hirano, Hiroshi; Kobayashi, Hiroshi; Jizaimaru, Jiro; and Shirasawa, Hidenori, 4,127,427, Cl. 148-36.000.
Kobayashi, Ryoichiro: *See—*
Ishihara, Masao; Kobayashi, Ryoichiro; Usui, Tugumoto; and Omura, Takayoshi, 4,127,413, Cl. 96-56.000.
Kobayashi, Toshiyuki: *See—*
Sato, Toyomi; Kobayashi, Toshiyuki; Mayama, Takeshi; and Okada, Akira, 4,127,647, Cl. 424-78.000.
Kobe Steel, Ltd.: *See—*
Hirano, Hiroshi; Kobayashi, Hiroshi; Jizaimaru, Jiro; and Shirasawa, Hidenori, 4,127,427, Cl. 148-36.000.
Koehring GmbH - Bomag Division: *See—*
Vural, Gulertan, 4,127,351, Cl. 404-72.000.
Koenig, Claus: *See—*
Schleifenbaum, Karl; Koenig, Claus; Thurmann, Wilhelm; and Munnich, Rolf, 4,127,690, Cl. 428-40.000.
Kohjin Co., Ltd.: *See—*
Shimizu, Shigeo; and Itoh, Akihiko, 4,127,698, Cl. 428-373.000.
Kohl, Lambert; Schneider, Richard; and Uhl, Karl, to BASF Aktiengesellschaft. Change-over mechanism for recording media, especially for floppy disks. 4,127,882, Cl. 360-98.000.
Koike, Ryuichi: *See—*
Nakamura, Tsutomu; and Koike, Ryuichi, 4,127,799, Cl. 318-373.000.
Koires, Vladimir I.: *See—*
Vasilkovsky, Vitaly P.; Koires, Vladimir I.; Khirdzhiev, Sergei G.; and Chekmenev, Viktor I., 4,127,019, Cl. 72-21.000.
Kojima, Saburo. Device for maintaining a stopped vehicle in braked condition. 4,127,793, Cl. 315-80.000.
Kolbeck, Andrew G.: *See—*
Quackenbush, Carr L. W.; Kolbeck, Andrew G.; and Klein, Richard M., 4,127,415, Cl. 106-47.00R.
Koller, Joseph A. Identification system for point to point wiring. 4,126,936, Cl. 29-628.000.
Kolling, Heinrich: *See—*
Wollweber, Hartmund; Kolling, Heinrich; and Thomas, Herbert, 4,127,670, Cl. 424-300.000.
Komar, Michal: *See—*
Wlodarski, Andrzej; Draminska, Krystyna; Oplotny, Wladyslaw; Mickiewicz, Andrzej; and Komar, Michal, 4,127,333, Cl. 366-131.000.
Komatsu, Toshio: *See—*
Yoshikawa, Yoshio; Amemiya, Akira; Komatsu, Toshio; Inoue, Yoshiaki; and Yuyama, Megumu, 4,127,503, Cl. 252-429.00R.
Komatsubara, Michiro: *See—*
Ichida, Toshio; and Komatsubara, Michiro, 4,127,429, Cl. 148-113.000.
Kondo, Ryohei, to Sankyo Electric Company Limited. Article storage unit devices for use in vending machines. 4,127,218, Cl. 221-124.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Ishihara, Masao; Kobayashi, Ryoichiro; Usui, Tugumoto; and Omura, Takayoshi, 4,127,413, Cl. 96-56.000.
Konya, Calvin J.; Chase, Robert W.; and Ameri, Seadet. Earth strata fracturing method. 4,127,068, Cl. 102-23.000.
Koppel, Gary A.: *See—*
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,127,568, Cl. 260-239.00A.
Koppelman, Edward. Process for making coke from bituminous fines and fuels produced therefrom. 4,127,391, Cl. 44-51.000.
Koppers Company, Inc.: *See—*
Wiemer, Erich, 4,127,381, Cl. 432-245.000.
Kosoczky, Ibolya: *See—*
Mikite, Gyula; Petocz, Lujza; Kosoczky, Ibolya; and Grasser, Katalin, 4,127,576, Cl. 424-265.000.
Kostlin, Heiner; Jost, Rudiger; and Auding, Hans, to U.S. Philips Corporation. Light-pervious, heat-reflecting filter and electric lamps having such a filter. 4,127,789, Cl. 313-112.000.
Koszi, Louis A.: *See—*
Ilegems, Marc; Koszi, Louis A.; and Schwartz, Bertram, 4,127,862, Cl. 357-30.000.
Kovach, Alan J.: *See—*
Gorgone, Robert L.; Iannadrea, Gerald; and Kovach, Alan J., 4,127,328, Cl. 356-71.000.
Kovesdi, Rudolf: *See—*
Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, 4,127,388, Cl. 422-258.000.
Koyama, Masaharu; Ishibashi, Tadashi; and Tanaka, Hironari, to Hitachi, Ltd. Liquid crystal display apparatus. 4,127,321, Cl. 350-336.000.
Koyano, Kimio; and Toshimitsu, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Power steering device for automotive vehicles. 4,127,186, Cl. 180-148.000.
Kozempel, Michael F.: *See—*
Craig, James C., Jr.; Kozempel, Michael F.; and Elias, Stanley, 4,127,597, Cl. 260-428.500.
Kraic, Otto: *See—*
Eiermann, Dankwart; and Kraic, Otto, 4,127,364, Cl. 417-373.000.
Eiermann, Dankwart; and Kraic, Otto, 4,127,369, Cl. 418-270.000.
Kramer, Charles E., to Celanese Corporation. Melt polymerization process for preparing a melt processable resorcinol phthalate polyester utilizing a metal acetate catalyst. 4,127,560, Cl. 528-273.000.
Kramer, Wolfgang: *See—*
Schmidt, Thomas; Kramer, Wolfgang; and Kranz, Eckart, 4,127,728, Cl. 560-124.000.
Kranz, Eckart: *See—*
Schmidt, Thomas; Kramer, Wolfgang; and Kranz, Eckart, 4,127,728, Cl. 560-124.000.
Krapcho, John, to E. R. Squibb & Sons, Inc. Substituted sulfonamides having antiinflammatory activity. 4,127,606, Cl. 260-556.00A.
Kreft, Wilfried; and Goldmann, Wolf, to Polysius AG. Process for the heat treatment of fine material. 4,127,406, Cl. 75-26.000.
Kreuzer, Martin: *See—*
Bauer, Ewald; and Kreuzer, Martin, 4,127,741, Cl. 174-189.000.
Krohe, Alfred, to Carnovia Verrebanstall FL, Firma. Baking appliance

adapted to be heated in the oven of a cooker. 4,127,108, Cl. 126-369.000.

Kronner, Richard F. Fracture reducing and joint immobilizing apparatus. 4,127,119, Cl. 128-92.00A.

Krueger, Paul J. Charge-transfer voltage converter. 4,127,895, Cl. 363-86.000.

Krumpelt, Michael; and Hirozawa, Stanley T., to BASF Wyandotte Corporation. Method of reducing chlorate formation in a chlor-alkali electrolytic cell. 4,127,457, Cl. 204-98.000.

Krylov, Oleg V.: *See*—
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.

Krylova, Valentina V.: *See*—
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.

Kubelka, Axel: *See*—
Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, 4,127,284, Cl. 280-605.000.

Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, to Kurosaki Refractories Co., Ltd. Method and apparatus for automatically repairing the lining of a furnace. 4,127,626, Cl. 264-30.000.

Kuhn, John A.: *See*—
Adamski, Maximilian, Jr.; and Kuhn, John A., 4,127,075, Cl. 112-122.000.

Kulisch, Volker: *See*—
Schulde, Felix; Obendorf, Johann; and Kulisch, Volker, 4,127,562, Cl. 528-94.000.

Kurahashi, Yoshio: *See*—
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Kurahashi, Yoshio, 4,127,673, Cl. 424-322.000.

Kurata, Mamoru, to Tokyo Shibaura Electric Co., Ltd. Gate turn-off type thyristor with separate semiconductor resistive wafer providing emitter ballast. 4,127,863, Cl. 357-38.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.

Kurosaki Refractories Co., Ltd.: *See*—
Kubo, Sueki; Toso, Katsuya; and Fujita, Masayuki, 4,127,626, Cl. 264-30.000.

Kurth, Klaus; Tra, Josef; and Lorenz, Werner, to J. M. Voith G.m.b.H. Apparatus for straining suspensions. 4,127,479, Cl. 209-273.000.

Kusabe, Kouji: *See*—
Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; Kusabe, Kouji; and Kaseda, Mikio, 4,127,595, Cl. 260-352.000.

Kuus, Gijsbert; and de Ridder, Adriaan J., to U.S. Philips Corporation. High-pressure discharge lamp. 4,127,790, Cl. 313-174.000.

Kuwano, Satoshi; Yabuzaki, Shun-ichi; Kitaichi, Satoshi; Takesawa, Seiichi; Minabe, Hitoshi; and Nakamura, Tsuneshi, to Matsushita Electric Industrial Co., Ltd. Method for mounting chip type circuit elements on a printed circuit board and apparatus for performing the same. 4,127,432, Cl. 156-297.000.

Kwiatkowski, Karol, to M. L. Aviation Company Limited. Webbing strops. 4,127,344, Cl. 403-374.000.

Kylmanen, Jouko, to OY. Stromberg AB. Contact device for an electric switch. 4,127,757, Cl. 200-254.000.

La Cellophane: *See*—
Quang, Pham K., 4,127,084, Cl. 118-657.000.

La General de Fluides Geflu: *See*—
Murtin, Fernand R. C., 4,127,029, Cl. 73-194.00F.

Labaz: *See*—
Chignac, Michel; Grain, Claude; and Pigerol, Charles, 4,127,604, Cl. 562-606.000.
Chignac, Michel; Grain, Claude; and Pigerol, Charles, 4,127,607, Cl. 260-561.00R.
Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, 4,127,609, Cl. 260-563.00R.

Laboratoire L. Lafon: *See*—
Lafon, Louis, 4,127,722, Cl. 548-353.000.

Labouygues, Jean. Settling and drying apparatus. 4,126,947, Cl. 34-69.000.

Lafon, Louis, to Laboratoire L. Lafon. Benzhydrylsulphinyl derivatives. 4,127,722, Cl. 548-353.000.

Lakiza, Rostislav I.; and Podbeltsev, Viktor I. Tubular shaft of a marine line shafting. 4,127,080, Cl. 115-76.000.

LaMarche, Frederick W., to Sheldahl, Inc. Routing arrangement for ground conductors in printed circuit structures. 4,127,740, Cl. 174-68.500.

Lambert, Robert W.: *See*—
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,127,649, Cl. 424-177.000.

Lambregts, Antonius A., to Boeing Company, The. Apparatus for computing the rate of change of energy of an aircraft. 4,127,249, Cl. 244-191.000.

Lamons Metal Gasket Company: *See*—
Owen, A. B.; and Gifford, Bruce M., 4,127,277, Cl. 277-204.000.

Langer, Paul G. Rotor for eccentric helical gear pump. 4,127,368, Cl. 418-48.000.

Larin, Gennady P.: *See*—
Brovman, Mikhail Y.; Marchenko, Ivan K.; Mushenko, Nikolai Y.; Pilipenko, Alfred A.; Tkalenko, Vladimir A.; Romadin, Vladimir N.; and Larin, Gennady P., 4,127,258, Cl. 266-73.000.

Larmit, Adrianus J. F., to Ruti-Te Strake B.V. Weaving machine of the type in which weft insertion is effected by a fluid flow. 4,127,148, Cl. 139-435.000.

Larsen, Donald W.; and Wood, Louis L., to W. R. Grace & Co. Hydrophilic polyurethane foams with good wet strength. 4,127,516, Cl. 521-137.000.

Larson, Robert W.; and Lundberg, John P., to FMC of Canada, Ltd. Mobile tree processor. 4,127,152, Cl. 144-3.00D.

Lasar, William. Meat flaking machine. 4,127,236, Cl. 241-37.500.

Lass, Harold M., to Corban Industries, Inc. Dry wall taping machine having pneumatic assisted operation. 4,127,434, Cl. 156-526.000.

Lassche, Jakob. Coupling apparatus. 4,126,919, Cl. 24-230.00A.

Latin Percussion, Inc.: *See*—
Cohen, Martin, 4,127,053, Cl. 84-402.000.

Latorre, Alvaro. Method of effecting and enhancing an erection. 4,127,118, Cl. 128-79.000.

Lauenroth, Gerhard; and Papenkordt, Lutz, to Jenoptik Jena G.m.b.H. Device for photogrammetric evaluation of stereo-couples of photographs. 4,127,779, Cl. 250-558.000.

Laurin, Bernard L., to American Optical Corporation. Abrasion and antifog-resistant optical element. 4,127,682, Cl. 427-164.000.

Laurin, Bernard L., to American Optical Corporation. Abrasion-resistant lenses and process of making. 4,127,697, Cl. 428-412.000.

Lavielle, Gilbert: *See*—
Buzas, Andre; and Lavielle, Gilbert, 4,127,666, Cl. 424-274.000.

Laybourne, Sidney C. Writing instrument. 4,127,338, Cl. 401-8.000.

Le Carbone (Great Britain) Limited: *See*—
Davies, Pamela M., 4,127,287, Cl. 285-55.000.

Leachman, Frank A., to Superior Electric Company, The. Pamphlet with backbone. 4,127,285, Cl. 283-38.000.

Lebedev, Vladimir K.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Podola, Nikolai V.; and Obolonsky, Alexei P., 4,127,762, Cl. 219-121.0EM.

LeBoeuf, Albert R.: *See*—
Cuffe, Patricia M.; LeBoeuf, Albert R.; and Travnicek, Edward A., 4,127,638, Cl. 264-331.000.

Leboul, Jean: *See*—
Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, 4,127,609, Cl. 260-563.00R.

Leclercq, Phillippe, to Produits Chimiques Ugine Kuhlmann. Novel catalyst for conversion of sulfurous anhydride to sulfuric anhydride and vice versa. 4,127,509, Cl. 252-459.000.

Lederman, Frank L.; and Tiemann, Jerome J., to General Electric Company. Digital rectilinear ultrasonic imaging system. 4,127,034, Cl. 73-626.000.

Ledford, Thomas H.: *See*—
Baird, William C., Jr.; Bearden, Roby, Jr.; and Ledford, Thomas H., 4,127,470, Cl. 208-58.000.

Ledonne, Alfred D.; and Scheuering, George A., to Coupling Systems, Inc. Method and apparatus for stopping fluid escape from pipe mains. 4,127,141, Cl. 137-15.000.

Lee, Robert L. Jaw movement simulation. 4,126,938, Cl. 32-20.000.

Leenhouts, Albert C., to Superior Electric Company, The. Power chopper supply for a bifilar wound stepping motor. 4,127,801, Cl. 318-696.000.

Legoski, Paul L.: *See*—
Werthaiser, Martin S.; and Legoski, Paul L., 4,127,220, Cl. 222-1.000.

Lehment, Klaus-Friedrich: *See*—
Staffe, Adolf; Lehment, Klaus-Friedrich; and Backhaus, Wilhelm, 4,127,735, Cl. 568-726.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster for a vehicular brake system. 4,126,996, Cl. 60-547.00R.

Leibowitz, Marshall, to Timex Corporation. Electrochromic display adapted for multiplexing. 4,127,853, Cl. 340-336.000.

Leichle, Claude, to Regie Nationale des Usines Renault. Internal combustion engine ignition electronic control device and method. 4,127,091, Cl. 123-117.00D.

Leitz, Ludwig, to Ernst Leitz Wetzlar GmbH. Optical correlator. 4,127,778, Cl. 250-550.000.

Lemelson, Jerome H. Reflex reflectors with pyramid-shaped indentations. 4,127,693, Cl. 428-163.000.

Lenbo Investments (Proprietary) Limited: *See*—
Pretorius, Willem J., 4,127,270, Cl. 273-97.00R.

Lendi, Georges; and Zanier, Adriano U., to Tesa S.A. Adjustable fork gauge. 4,126,940, Cl. 33-147.00F.

Lenhard, Robert H.: *See*—
Bernstein, Seymour; Lenhard, Robert H.; and Heller, Milton D., 4,127,602, Cl. 260-506.000.

Leopold, Irving H., to Allergan Pharmaceuticals, Inc. Method of treatment for glaucoma. 4,127,674, Cl. 424-324.000.

LePon, Waleigh J. Modular shelf. 4,127,072, Cl. 108-111.000.

Leu, Willy: *See*—
Eberle, Jurg; and Leu, Willy, 4,127,262, Cl. 271-12.000.

Levi, Israel, to Northern Telecom Limited. Voltage boost circuit for telephone systems. 4,127,747, Cl. 179-16.00F.

Levine, Seymour D.: *See*—
Cimarusti, Christopher M.; and Levine, Seymour D., 4,127,589, Cl. 260-340.5AS.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,127,405, Cl. 71-93.000.

Levy, Ralph; and Young, Paul T. K., to Microwave Development

Labs. Inc. Fail-safe power combining and switching network. 4,127,829, Cl. 333-2.000.

Lewandowski, Raymond D.: *See—*
Walulik, Albert B.; Charney, John G.; Turk, Donald A.; Lewandowski, Raymond D.; and Pickett, Charles G., 4,127,484, Cl. 210-130.000.

Lewis, J. Stephen: *See—*
Sapkus, Jurgis; and Lewis, J. Stephen, 4,127,251, Cl. 248-176.000.

L'Henoret, Francois L.: *See—*
Rasigade, Herve P.; and L'Henoret, Francois L., 4,127,814, Cl. 324-208.000.

Li, Tingye, to Bell Telephone Laboratories, Incorporated. Multimode optical modulator/switch. 4,127,320, Cl. 350-96.130.

Liang, Charles C.; Joshi, Ashok V.; and Barnette, Luverne H., to P. R. Mallory & Co. Inc. Solid state cell with halogen-chalcogen-metal solid cathode. 4,127,708, Cl. 429-191.000.

Life Savers, Inc.: *See—*
Fronczkowski, Paul R.; and Friello, Dominick R., 4,127,677, Cl. 426-5.000.
Witzel, Frank; and Clark, K. Warren, 4,127,645, Cl. 424-44.000.

Light Industrial Design Co., Inc.: *See—*
Martin, Timothy J., Jr.; and Waschke, David C., 4,127,216, Cl. 220-374.000.

Li Mutti, Charles M.; Wu, Tai-Wing; and Lynn, Shirley Y., to Eastman Kodak Company. Stabilizers for reconstituted, lyophilized samples. 4,127,502, Cl. 252-408.000.

Lindenberger, William H., to Nalco Chemical Company. Polyether polyamines having inverse water solubility as stream generation aids. 4,127,494, Cl. 252-77.000.

Lindgren, Thomas E. Tethered ball and method of manufacture. 4,127,268, Cl. 273-58.00C.

Lindholm, Erik H.: *See—*
Jacobson, Gunnar; Jarnholt, Per-Erik; Lindholm, Erik H.; and Olsson, Olof B., 4,127,243, Cl. 244-3.210.

Lindsay Manufacturing Company: *See—*
Arndt, Kenneth E.; Otto, Lonnie E., Jr.; and Siekmeier, David A., 4,127,181, Cl. 180-14.00R.

Lion Hamigaki Kabushiki Kaisha: *See—*
Takemoto, Kiyochika; Suzuki, Yasuo; Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,127,125, Cl. 128-172.100.

Lipshield, Eugene C., to Orscheln Brake Lever Mfg. Company. Brake cable operating means of the overcenter toggle type. 4,127,042, Cl. 74-520.000.

Liquichimica Robassomero S.p.A.: *See—*
Fossati, Franco; Peditto, Andrea; and Petrillo, Vincenzo, 4,127,492, Cl. 252-51.50A.

Lobell, Jewel M. Weatherstrip tape. 4,126,966, Cl. 49-489.000.

Logan, B. Grant, to United States of America, Energy. Charge exchange cooling in the tandem mirror plasma confinement apparatus. 4,127,442, Cl. 176-3.000.

Logan, John C.: *See—*
Weaver, Gerald Q.; and Logan, John C., 4,127,629, Cl. 264-63.000.

Login, Robert B.: *See—*
Newkirk, David D.; Thir, Basil; and Login, Robert B., 4,127,490, Cl. 252-8.900.

Long, Donald E.; Rushby, Robert J.; and Toraskar, Krantikumar V., to NCR Canada Ltd - NCR Canada Ltee. Means for adjustment of speed of prime mover. 4,127,800, Cl. 318-685.000.

Lore, Albert L.; and Raynolds, Stuart, to Du Pont de Nemours, E. I., and Company. Fluorine-containing terpolymers. 4,127,711, Cl. 526-245.000.

Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-alkyl-6-chloro-benzisoxazol-(3)-yl-thionophosphoric (phosphonic) acid esters. 4,127,653, Cl. 424-200.000.

Lorenz, Werner: *See—*
Kurth, Klaus; Tra, Josef; and Lorenz, Werner, 4,127,479, Cl. 209-273.000.

Lotz, Alexander: *See—*
Aldick, Willi; and Lotz, Alexander, 4,127,480, Cl. 209-457.000.

Lovell, Anthony L.: *See—*
Aldcroft, Derek; Barby, Donald; Lovell, Anthony L.; and Quinn, James P., 4,127,641, Cl. 423-339.000.

Lowthorp, Blaine G., to Sheldahl, Inc. Tactile touch switch panel. 4,127,752, Cl. 200-5.00A.

Lowthorp, Blaine G., to Sheldahl, Inc. Tactile layer having hinged dome. 4,127,758, Cl. 200-340.000.

Luca, Vasile: *See—*
Gurgui, Constantin N.; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv I., 4,127,433, Cl. 156-498.000.

Lucas Industries Limited: *See—*
Lumby, Roland J.; North, Bernard; and Taylor, Alfred J., 4,127,416, Cl. 106-73.200.

Luckey, William A. Rafter vent. 4,126,973, Cl. 52-91.000.

Ludwig, Arthur C.: *See—*
Capps, Charles P.; Hardie, George S.; Ludwig, Arthur C.; Maybell, Michael J.; and Wideman, Gary A., 4,127,857, Cl. 343-754.000.

Lukashov, Eduard S.; and Yakobson, Marina K., to Sibirsky Nauchno-Issledovatelsky Institut Energetiki. Device for connecting tuned power transmission line to a.c. network. 4,127,805, Cl. 323-120.000.

Lum, Jackson: *See—*
Gagliardo, Michael; Schubert, Howard W.; Malvin, Rahm P.; and Lum, Jackson, 4,127,232, Cl. 235-419.000.

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Lundberg, John P.: *See—*
Larson, Robert W.; and Lundberg, John P., 4,127,152, Cl. 144-3.00D.

Lundberg, Robert D.; Phillips, Robert R.; Makowski, Henry S.; and Brenner, Douglas, to Exxon Research & Engineering Company. Plasticization of neutralized sulfonated elastomers with rosin salts. 4,127,546, Cl. 260-27.0BB.

Lurssen, Klaus: *See—*
Colln, Reimer; and Lurssen, Klaus, 4,127,401, Cl. 71-76.000.

Luth, Friedrich A. K. Apparatus for controlling the injection of oil into a blast furnace. 4,127,259, Cl. 266-83.000.

Luthra, Vinod K., to Mobil Oil Corporation. Apparatus for thermoplastic foam extrusion. 4,127,371, Cl. 425-72.00R.

Lux, Erich: *See—*
Alewelt, Wolfgang; Jacobs, Gunter; Margotte, Dieter; and Lux, Erich, 4,127,561, Cl. 528-199.000.

Luz, David W.: *See—*
Fernsler, Ronald E.; Peer, John C.; and Luz, David W., 4,127,875, Cl. 358-190.000.

Lynn, Shirley Y.: *See—*
Li Mutti, Charles M.; Wu, Tai-Wing; and Lynn, Shirley Y., 4,127,502, Cl. 252-408.000.

M. L. Aviation Company Limited: *See—*
Kwiatkowski, Karol, 4,127,344, Cl. 403-374.000.

Mabus, Richard C. Needle dispenser. 4,127,219, Cl. 221-303.000.

MacGregor, John J., to Matthey Rustenburg Refiners (Proprietary) Limited. Treatment of effluents. 4,127,458, Cl. 204-109.000.

Maciaszek, Joseph A., to Nalco Chemical Company. Apparatus and method for dispersing a liquid treating agent. 4,127,233, Cl. 239-8.000.

MacRae, David M.; and Roberts, Karl H., to Colgate-Palmolive Company. Waxing sponge. 4,127,515, Cl. 521-112.000.

Macuga, Henry J.; and Deschamps, Bernard F., to Eclipse Mfg. Inc. Fixture hanging assembly. 4,126,971, Cl. 52-28.000.

Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, to Alkaloida Vegyeszeti Gyar. Apparatus for contacting fused solid materials with solid, liquid or gaseous materials. 4,127,388, Cl. 422-258.000.

Mader, William J. Securing device for flexible farm gates. 4,127,292, Cl. 292-246.000.

Maekawa, Yousuke: *See—*
Ueda, Shigeru; Yokoyama, Shinichi; Nakata, Yoshinori; Hasegawa, Yoshihisa; Yoshida, Ryoichi; Maekawa, Yousuke; Yoshida, Yuji; and Makino, Kazuo, 4,127,151, Cl. 141-5.000.

Mahle GmbH: *See—*
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Majka, Henry C.: *See—*
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Makino, Kazuo: *See—*
Ueda, Shigeru; Yokoyama, Shinichi; Nakata, Yoshinori; Hasegawa, Yoshihisa; Yoshida, Ryoichi; Maekawa, Yousuke; Yoshida, Yuji; and Makino, Kazuo, 4,127,151, Cl. 141-5.000.

Makishima, Tokuo: *See—*
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Makishima, Tokyo: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokyo; and Wada, Shozo, 4,127,505, Cl. 252-429.00B.

Makowski, Henry S.: *See—*
Lundberg, Robert D.; Phillips, Robert R.; Makowski, Henry S.; and Brenner, Douglas, 4,127,546, Cl. 260-27.0BB.

Malacheski, Joseph J.; Stelmack, Edward; and Zenda, Richard J. Dispenser package for fluent material. 4,127,339, Cl. 401-132.000.

Malchesky, Paul S.; and Nose, Yukihiko, to Japan Foundation for Artificial Organs. Device and method for effecting fluid interchange functions. 4,127,481, Cl. 210-22.00A.

Malpass, Dennis B.: *See—*
Fannin, Loyd W.; and Malpass, Dennis B., 4,127,507, Cl. 252-431.00R.

Malvin, Rahm P.: *See—*
Gagliardo, Michael; Schubert, Howard W.; Malvin, Rahm P.; and Lum, Jackson, 4,127,232, Cl. 235-419.000.

Mann, Elbert T. Wheel chair lift device. 4,127,200, Cl. 214-75.00H.

Manser, Josef; and Dankesreiter, Georg, to Gebrueder Buehler AG. Method and apparatus for bulk material treatment. 4,126,945, Cl. 34-4.000.

Marceau, J. Arthur; Firminhac, Ralph H.; and Moji, Yukimori, to Boeing Company, The. Method for providing environmentally stable aluminum surfaces for adhesive bonding and product produced. 4,127,451, Cl. 204-38.00A.

Marchenko, Ivan K.: *See—*
Brovman, Mikhail Y.; Marchenko, Ivan K.; Mushenko, Nikolai Y.; Pilipenko, Alfred A.; Tkalenko, Vladimir A.; Romadin, Vladimir N.; and Larin, Gennady P., 4,127,258, Cl. 266-73.000.

Margolis, Lia Y.: *See—*
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.

Margotte, Dieter: *See—*
Alewelt, Wolfgang; Jacobs, Gunter; Margotte, Dieter; and Lux, Erich, 4,127,561, Cl. 528-199.000.

Marks, Bruce G., to RCA Corporation. High voltage electron tube base with drip relief means. 4,127,313, Cl. 339-144.00T.

Martens, Gunter, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martens, Hannelore, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martens, Hans, deceased (by Martens, Hildegard, legal heir); by Martens, Harald, legal heir; by Martens, Rainer, legal heir; by Martens, Hans-Wolfgang, legal heir; by Martens, Gunter, legal heir; by Martens, Sigrid, legal heir; by Martens, Hannelore, legal heir; and by Martens, Helmut, legal heir, to Siemens Aktiengesellschaft. Method for the manufacture of a superconductive Nb_3Sn layer on a niobium surface for high frequency applications. 4,127,452, Cl. 204-38.00A.

Martens, Hans-Wolfgang, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martens, Harald, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

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Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martens, Hildegard, legal heir: *See*—
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Martens, Rainer, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martens, Sigrid, legal heir: *See*—
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.

Martig, Kenneth W., Jr. Flow measurement. 4,127,030, Cl. 73-194.00R.

Martig, Kenneth W., Jr., to Pro-Tech, Inc. Flow monitoring. 4,127,032, Cl. 73-215.000.

Martin, Graham E.; Cockshott, Ian D.; and McAloon, Kevin T., to Imperial Chemical Industries Limited. Porous fluoropolymeric fibrous sheet and method of manufacture. 4,127,706, Cl. 429-122.000.

Martin, Thomas B.; and Pieters, Ferdinanders, to Micropump Corporation. Gear pump with suction shoe at gear mesh point. 4,127,365, Cl. 417-420.000.

Martin, Timothy J., Jr.; and Waschke, David C., to Light Industrial Design Co., Inc. Venting closure assembly for milk tank or the like. 4,127,216, Cl. 220-374.000.

Martinez, Miguel, to Ethicon, Inc. Bonded controlled release needle-suture combinations. 4,127,133, Cl. 128-339.000.

Marvin Glass & Associates: *See*—
Barlow, Gordon A.; and Disko, Harry, 4,126,961, Cl. 46-119.000.
Schlau, Floyd E.; Disko, Harry; and Brand, Derek A., 4,127,377, Cl. 425-385.000.

Maschinenfabrik Fahr AG Gottmadingen: *See*—
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Maslov, Sergei A.: *See*—
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.

Mason, Donald G.: *See*—
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Massachusetts Institute of Technology: *See*—
Raffel, Jack I.; and Yasaitis, John A., 4,127,900, Cl. 365-191.000.

Masuda, Kazuo: *See*—
Hirakawa, Koichi; Shibano, Takashi; and Masuda, Kazuo, 4,127,695, Cl. 428-371.000.

Mathieu, Francis D. A.; and Saintenoy, Edmond, to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Installation for releasing submerged floats. 4,127,007, Cl. 405-171.000.

Matsumoto, Kunio, to Copal Company Limited. Electric shutter. 4,127,326, Cl. 354-234.000.

Matsuno, Kenji, to Toyo Kohan Co., Ltd. Process for preparing hollow metallic bodies. 4,127,158, Cl. 164-81.000.

Matsushima, Shunsuke; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for producing polyolefin short fibers. 4,127,623, Cl. 264-13.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Atoji, Nobuhisa; Naono, Hiroyuki; Yamamoto, Hiroshi; and Ibaraki, Satoru, 4,127,749, Cl. 179-110.00A.
Hirakawa, Koichi; Shibano, Takashi; and Masuda, Kazuo, 4,127,695, Cl. 428-371.000.
Kuwano, Satoshi; Yabuzaki, Shun-ichi; Kitaichi, Satoshi; Takesawa, Seiichi; Minabe, Hitoshi; and Nakamura, Tsuneshi, 4,127,432, Cl. 156-297.000.
Nagaoka, Yoshitomi; Tomimoto, Tetsuo; and Sasaki, Reiichi, 4,127,868, Cl. 358-29.000.
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,127,884, Cl. 360-119.000.
Wakami, Noboru; and Deguchi, Masahiro, 4,127,881, Cl. 360-70.000.

Matsuura, Ryo; Nakatani, Shuichi; Nagaoka, Kazuya; Kusabe, Kouji; and Kaseda, Mikio, to Kawasaki Kasei Chemicals Ltd. Process for producing benzanthrone. 4,127,595, Cl. 260-352.000.

Mattel, Inc.: *See*—
Guerrero, Benjamin G., 4,126,960, Cl. 46-118.000.
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Matthey Rustenburg Refiners (Proprietary) Limited: *See*—
MacGregor, John J., 4,127,458, Cl. 204-109.000.

Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Combating pests with O-alkyl-O-[pyrimidin(5)yl]-(thiono)(thiol) phosphoric(phosphonic) acid esters and ester-amides. 4,127,652, Cl. 424-200.000.

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Knoche, Wilhelm; and Wiese, Gottfried, 4,127,330, Cl. 356-246.000.

Mayama, Takeshi: *See*—
Sato, Toyomi; Kobayashi, Toshiyuki; Mayama, Takeshi; and Okada, Akira, 4,127,647, Cl. 424-78.000.

Maybell, Michael J.: *See*—
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McAloon, Kevin T.: *See*—
Martin, Graham E.; Cockshott, Ian D.; and McAloon, Kevin T., 4,127,706, Cl. 429-122.000.

McConnellogue, Neal J., to Entech Corporation. Easy-open push-tab end for metal containers. 4,127,213, Cl. 220-268.000.

McCrary, John S.: *See*—
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McCulloch Corporation: *See*—
Pilatowicz, Edward J., 4,127,090, Cl. 123-98.000.

McCullough, Michael J.; and Taraschi, Frederic T., to Du Pont de Nemours, E. I., and Company. Collapsible bag type container take-up reel. 4,127,280, Cl. 280-5.00D.

McEathron, Eugene D., to General Signal Corporation. Fluid brake control system. 4,127,308, Cl. 303-35.000.

McEntee, Harry R. Process for removing biphenyls from chlorosilanes. 4,127,598, Cl. 260-448.20E.

McGregor, Stanley D., to Dow Chemical Company, The. Preparation of chloro substituted pyridines. 4,127,575, Cl. 546-345.000.

McIntosh, Colin L., to Du Pont de Nemours, E. I., and Company. Carboxyphosphonate brush control agents. 4,127,403, Cl. 71-86.000.

McKee, William H., to TRW Inc. Cable clamp and hood constructions for use with ribbon connectors. 4,127,315, Cl. 339-103.00B.

McKee, William H.; and Witte, Roy, to TRW Inc. Cable clamp construction. 4,127,316, Cl. 339-103.00R.

McKenna, Raymond F. Belt type weapon. 4,126,902, Cl. 2-338.000.

McKey, Paul M.; and Jensen, Niels C., Jr., to Pall Corporation. Adsorbent fractionator with fail-safe automatic cycle control and process. 4,127,395, Cl. 55-20.000.

McKinzie, Howard, to GTE Laboratories Incorporated. Photoelectrochemical metal plating and purification system. 4,127,466, Cl. 204-248.000.

McLarty, Tom E., to American Air Filter Company, Inc. Silencer device. 4,127,183, Cl. 181-224.000.

McShane, Lawrence J.: *See*—
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Meadors, William R., to Peerless Machine & Tool Corporation. Apparatus for cold-forming plastic sheet. 4,127,378, Cl. 425-398.000.

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Berst, Albert H.; Kline, Richard L.; Medcalf, William A.; Onnen, James H.; and Schupp, Philipp P., 4,127,621, Cl. 261-118.000.

Medfare, Inc.: *See*—
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Mefina S.A.: *See*—
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Megy, Joseph A., to Teledyne Industries, Inc. Method of reducing zirconium. 4,127,409, Cl. 75-84.400.

Mehta, Arun K.; and Smith, Donald A., to Combustion Engineering, Inc. Plural bowl mills in series. 4,127,237, Cl. 241-58.000.

Meijer, Roelf J.: *See*—
Asselman, George A. A.; Fokker, Herman; and Meijer, Roelf J., 4,126,995, Cl. 60-524.000.

Meiji Seika Kaisha, Ltd.: *See—*
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Melcher, Gerhard: *See—*
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Melgeorge, Edward L. Auxiliary heating device for standard hot water type home heating systems. 4,127,107, Cl. 126-361.000.
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Melley, Joseph F.; and Fischer, Richard K., to Melley Energy Systems, Inc. Transition piece for power plant in mobile electric power generating systems. 4,127,300, Cl. 296-28.00R.
Meloy Laboratories, Inc.: *See—*
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Melrose Displays, Inc.: *See—*
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Menth, Anton: *See—*
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Meratti, Gianattilio. Automatic signature opener. 4,127,261, Cl. 270-55.000.
Merck & Co., Inc.: *See—*
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Tull, Roger J.; Hartman, George D.; and Weinstock, Leonard M., 4,127,721, Cl. 544-254.000.
Merensalmi, Matti J., to Farmos-Yhtyma Oy. Fodder additive for ruminants. 4,127,676, Cl. 426-2.000.
Merrick, Howard F.; and Curwick, LeRoy R., to International Nickel Company, Inc., The. Nickel based alloy. 4,127,410, Cl. 75-171.000.
Mestdagh, Gilbert E., to U.S. Philips Corporation. Supporting mechanism for magnetic tape recorder. 4,127,883, Cl. 360-105.000.
Metallschlauch-Fabrik Pforzheim (vorm. Hch. Witzenmann) Gesellschaft mit beschrankter Haftung: *See—*
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Meteor-Siegen Apparatbau Paul Schmeck: *See—*
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Metraplan SPAA: *See—*
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Meyer, Philip J.; and Delavega, Robert P., to Geotel, Inc. Electrical plasma jet torch and electrode therefor. 4,127,760, Cl. 219-121.00P.
Michaels, Alan S.: *See—*
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Mickiewicz, Andrzej: *See—*
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Micropump Corporation: *See—*
Martin, Thomas B.; and Pieters, Ferdinanders, 4,127,365, Cl. 417-420.000.
Microwave Development Labs. Inc.: *See—*
Levy, Ralph; and Young, Paul T. K., 4,127,829, Cl. 333-2.000.
Middel, Andreas P., to U.S. Philips Corporation. Device for displaying characters. 4,127,851, Cl. 340-324.0AD.
Migitaka, Wataru; Sunago, Hirofumi; Ogawa, Yukiyosi; and Nisihata, Takanori, to Nittetsu Chemical Industrial Co., Ltd. Process for preparing a raw material for the manufacture of needle coke. 4,127,472, Cl. 208-87.000.
Mikite, Gyula; Petocz, Lujza; Kosoczky, Ibolya; and Grasser, Katalin, to Egyt Gyogyszervegyeszeti Gyar. Nortropine-carbazate derivatives. 4,127,576, Cl. 424-265.000.
Miles Laboratories, Inc.: *See—*
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Kluender, Harold C., 4,127,727, Cl. 560-121.000.
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Bertone, Gregory A., 4,127,024, Cl. 73-27.00R.
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Nagaoka, Yoshitomi; Tomimoto, Tetsuo; and Sasaki, Reiichi, to Matsushita Electric Industrial Co., Ltd. Circuitry for nonlinear processing of reference white on color image. 4,127,868, Cl. 358-29.000.
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Naysmith, Kenneth D. Air muffler. 4,127,130, Cl. 128-142.700.
NCR Canada Ltd - NCR Canada Ltee: *See*—
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Negi, Virendra S.; and Miu, Ming T., to Honeywell Information Systems Inc. Data processing system self-test enabling technique. 4,127,768, Cl. 235-304.100.
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Nelson, Carl T., to National Semiconductor Corporation. Integrated circuit subsurface zener diode. 4,127,859, Cl. 357-13.000.
Nelson, Jacob T. Dispensing device. 4,127,375, Cl. 425-313.000.
Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-17-phenyl-11-deoxy-PGF$_1$ analogs. 4,127,733, Cl. 568-807.000.
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Method of making electrical conductors of aluminum-iron alloys. 4,127,426, Cl. 148-11.50A.
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Oakes, Harry C. Wood bit. 4,127,355, Cl. 408-225.000.
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Takemoto, Kiyochika; Suzuki, Yasuo; Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,127,125, Cl. 128-172.100.
O'Connor, Michael N. D.: *See—*
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Ogawa, Yukiyosi: *See—*
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Ohlson, Carl-Eric, to AO:s Metall & Mek. Verkstad AB. X-ray unit stand having field controlled brake release. 4,127,775, Cl. 250-490.000.
Ohtaki, Shohei; Tsunekawa, Tokuichi; Nakamura, Zenzo; and Uchiyama, Takashi, to Canon Kabushiki Kaisha. Automatic exposure control camera. 4,127,325, Cl. 354-32.000.
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Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.
Ohya, Tokuji; and Isoi, Toshihiro, to Yuasa Battery Company Limited. Storage battery. 4,127,707, Cl. 429-149.000.
Oikawa, Nisaburo, to Rasa Shoji K.K. Method of making granulated slag. 4,127,399, Cl. 65-19.000.
Okada, Akira: *See—*
Sato, Toyomi; Kobayashi, Toshiyuki; Mayama, Takeshi; and Okada, Akira, 4,127,647, Cl. 424-78.000.
Okada, Eizaburo; and Hattori, Kenichi, to Kao Soap Co., Ltd. Method for improving workability of fresh fiber containing cement mortar and concrete. 4,127,417, Cl. 106-99.000.
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Mogi, Takao; and Okada, Hisao, 4,127,822, Cl. 325-464.000.
Okada, Yasunori: *See—*
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, 4,127,553, Cl. 260-33.20R.
Okamoto, Miyoshi, to Toray Industries, Inc. Multi-core composite filaments and process for producing same. 4,127,696, Cl. 428-373.000.
Okawa, Kunio: *See—*
Kato, Yasuo; Kakiuchi, Motoo; Arai, Takashi; and Okawa, Kunio, 4,127,841, Cl. 338-128.000.
O'Keefe, Michael F.: *See—*
Forney, Edgar W., Jr.; Johnson, Tore R.; and O'Keefe, Michael F., 4,127,319, Cl. 350-96.200.
Oki Electric Industry Co., Ltd.: *See—*
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Oki, Toshikazu: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,127,714, Cl. 536-17.000.
Okor, Joseph K. System for converting coded data into display data. 4,127,849, Cl. 340-324.0AD.
Okuda, Yukio: *See—*
Omura, Morikazu; and Okuda, Yukio, 4,127,782, Cl. 307-10.00R.
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Cier, Andre; Gero, Stephan; Olesker, Alain; and Leboul, Jean, 4,127,609, Cl. 260-563.00R.
Olinkraft, Inc.: *See—*
Bamburg, Robert A.; Floyd, Roger M.; and Duncan, Farris N., 4,127,230, Cl. 229-45.00R.
Olson, Gary L.; and Saucy, Galbriel, to Hoffmann-La Roche Inc. Synthesis of Vitamin E. 4,127,608, Cl. 260-567.60P.
Olson, George B.; and Drube, Clairmont. Ichorin and its uses. 4,127,648, Cl. 424-86.000.
Olsson, Olof B.: *See—*
Jacobson, Gunnar; Jarnholt, Per-Erik; Lindholm, Erik H.; and Olsson, Olof B., 4,127,243, Cl. 244-3.210.
Omori, Mamoru: *See—*
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Ishihara, Masao; Kobayashi, Ryoichiro; Usui, Tugumoto; and Omura, Takayoshi, 4,127,413, Cl. 96-56.000.
Omuro, Shojiro: *See—*
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O'Nan, Alex, Jr.; and Goldsmith, Jesse M., to American Air Filter Company, Inc. Discharge apparatus for filter assembly for radioactive contaminants. 4,127,397, Cl. 55-479.000.
Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,127,729, Cl. 560-147.000.
O'Neill, Gerald J., to W. R. Grace & Co. Stabilization of methyl trifluorovinyl ether. 4,127,613, Cl. 568-581.000.
Onnen, James H.: *See*—
Berst, Albert H.; Kline, Richard L.; Medcalf, William A.; Onnen, James H.; and Schupp, Philipp P., 4,127,621, Cl. 261-118.000.
Ono, Tomoyoshi: *See*—
Suzuki, Hideaki; Ono, Tomoyoshi; Yamamoto, Wataru; and Yamamoto, Naoki, 4,127,500, Cl. 252-358.000.
Oosterkamp, Johannes F. Method and equipment for installing marine pipelines to extremely great water depth. 4,127,006, Cl. 405-171.000.
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Wlodarski, Andrzej; Draminska, Krystyna; Oplotny, Wladyslaw; Mickiewicz, Andrzej; and Komar, Michal, 4,127,333, Cl. 366-131.000.
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Frohlich, Alfons, 4,127,147, Cl. 139-11.000.
Orscheln Brake Lever Mfg. Company: *See*—
Lipshield, Eugene C., 4,127,042, Cl. 74-520.000.
Ortho Pharmaceutical Corporation: *See*—
Chen, Robert H. K.; and Kanojia, Ramesh M., 4,127,651, Cl. 424-195.000.
Osada, Yuichi; Okada, Yasunori; Kasai, Shozo; Nakano, Mineo; Tachiki, Shigeo; Hayashi, Nobuyuki; and Abo, Masahiro, to Hitachi Chemical Company, Ltd. Electrical insulating resin composition comprising a polyester resin or ester-imide resin. 4,127,553, Cl. 260-33.20R.
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Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, 4,127,590, Cl. 260-346.740.
Osborne, Bodwell D., to Standard Oil Company (Indiana). Riser/jacket vertical bearing assembly for vertically moored platform. 4,127,005, Cl. 405-227.000.
Otaki, Tadaaki: *See*—
Kamimura, Shigeo; and Otaki, Tadaaki, 4,127,591, Cl. 260-346.750.
Otis Engineering Corporation: *See*—
Arendt, Henry P., 4,127,167, Cl. 166-85.000.
Ott, Hans-Rudolf: *See*—
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Otto, Lonnie E., Jr.: *See*—
Arndt, Kenneth E.; Otto, Lonnie E., Jr.; and Siekmeier, David A., 4,127,181, Cl. 180-14.00R.
Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, 4,127,454, Cl. 204-59.00R.
Outboard Marine Corporation: *See*—
Kidd, Earl H., 4,126,986, Cl. 56-202.000.
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Klaile, Borje E. W.; Kayhko, Jussi J.; and Rosenberg, Eino A., 4,127,235, Cl. 241-1.000.
Overhead Door Corporation: *See*—
Smith, Vernon O.; and Abbott, Ronald E., 4,126,909, Cl. 14-71.300.
Owen, A. B.; and Gifford, Bruce M., to Lamons Metal Gasket Company. Spiral wound gasket assembly and method. 4,127,277, Cl. 277-204.000.
OY. Stromberg AB.: *See*—
Kylmanen, Jouko, 4,127,757, Cl. 200-254.000.
Ozawa, Akio; and Seyoshi, Susumu, to Pioneer Electronic Corporation. Muting circuit for loudspeaker. 4,127,743, Cl. 179-1.00A.
P.P.B. Enterprises: *See*—
Pyne, Charles J., Jr., 4,126,939, Cl. 32-22.000.
P. R. Mallory & Co. Inc.: *See*—
Liang, Charles C.; Joshi, Ashok V.; and Barnette, Luverne H., 4,127,708, Cl. 429-191.000.
Packer, Eugene S.: *See*—
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Padilla, Amphlett G.: *See*—
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Paillard, Lionel: *See*—
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Pall Corporation: *See*—
McKey, Paul M.; and Jensen, Niels C., Jr., 4,127,395, Cl. 55-20.000.
Palmer, Jeffrey T.: *See*—
Bateman, Mark E.; and Palmer, Jeffrey T., 4,127,418, Cl. 106-213.000.
Pannetier, Henri. Massaging apparatus. 4,127,116, Cl. 128-57.000.
Panzer, Hans P.; O'Connor, Michael N. D.; and Baccei, Louis J., to American Cyanamid Company. Method of preparing pyrimidines. 4,127,719, Cl. 544-242.000.
Pap Smear Center, Inc.: *See*—
Nollan, Theodore G., 4,127,113, Cl. 128-2.00W.
Pape, Hermann; Schroeder, Peter; and Schmitz, Rudolf, to Gardisette Holding AG. Curtain or drape packing, transporting and storing arrangement. 4,126,921, Cl. 29-281.100.
Papenkordt, Lutz: *See*—
Lauenroth, Gerhard; and Papenkordt, Lutz, 4,127,779, Cl. 250-558.000.
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Braye, Emile, 4,127,580, Cl. 546-114.000.
Parker, Fredrick J.: *See*—
Kendall-Smith, Brian J.; Parker, Fredrick J.; and Nicklin, Norman B., 4,127,555, Cl. 260-37.00N.
Parkes, Roger J., to Rolls-Royce Limited. Blade or vane for a gas turbine engine. 4,127,358, Cl. 416-97.00R.
Parsons, Jack, to Norton Engineering Alloys Company Limited. Metal grating. 4,126,980, Cl. 52-669.000.
Partridge, John J., Jr.: *See*—
Chadha, Naresh K.; Partridge, John J., Jr.; and Uskokovic, Milan R., 4,127,736, Cl. 568-838.000.
Partyka, Richard A.: *See*—
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Passoni, Anselmo G.: *See*—
Hellier, Stephen J.; and Passoni, Anselmo G., 4,127,361, Cl. 417-48.000.
Paton, Boris E.; Lebedev, Vladimir K.; Podola, Nikolai V.; and Obolonsky, Alexei P. Method for controlling and stabilizing fusion depth in electron-beam welding and device for effecting same. 4,127,762, Cl. 219-121.0EM.
Patterson, William R., to General Electric Company. Variable shroud for a turbomachine. 4,127,357, Cl. 415-116.000.
Patzchke, Hans-Peter, to Dr. Kurt Herberts & Co. Gesellschaft mit beschrankter Haftung Vorm. Otto Louis Herberts. Aqueous coating composition free from phenolic resin. 4,127,543, Cl. 260-23.00R.
Paulen, Hendrikus J. G., to Stamicarbon, B.V. Photo process for preparing mixtures with building tack which are based on rubber-like copolymers of ethylene. 4,127,461, Cl. 204-159.140.
Pauley, John T.; and Russell, John D., to Welding Institute, The. Laser welding. 4,127,761, Cl. 219-121.00L.
Pedersen, Jan. Grinding device for gate valves. 4,126,968, Cl. 51-241.0VS.
Peditto, Andrea: *See*—
Fossati, Franco; Peditto, Andrea; and Petrillo, Vincenzo, 4,127,492, Cl. 252-51.50A.
Pedraza, Rafael. Hinge assembly for container doors. 4,127,214, Cl. 220-334.000.
Pedrerol, Johann: *See*—
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Peer, John C.: *See*—
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Meadors, William R., 4,127,378, Cl. 425-398.000.
Pelcin, Albert L., to Eastern Company, The. Door fastening apparatus. 4,127,291, Cl. 292-54.000.
Pender, David R. Rotary wing aircraft mast arrangement. 4,127,244, Cl. 244-7.00R.
Pennell, Gordon G. Portable soccer goal. 4,127,272, Cl. 273-102.00R.
Pennwalt Corporation: *See*—
Ferren, Richard A.; and Radice, Peter F., 4,127,681, Cl. 427-100.000.
Pickel, Richard A., 4,127,776, Cl. 250-520.000.
Peplow, Marvin J.; and Wells, Peter M., Jr., to Ideal Industries, Inc. Hand-held circuit tester with lens arrangement for viewing indicator lamps housed within the tester. 4,127,807, Cl. 324-51.000.
Perkut, Branko R., to MRT Magnet-Regeltechnik G.m.b.H. Method of producing magnetic bodies and the use thereof in magnetic locks. 4,127,017, Cl. 70-276.000.
Perla, Giulio; and D'Arcangeli, Alessandro, to Colgate-Palmolive Company. Apparatus for manufacturing marbled and striped soap. 4,127,372, Cl. 425-131.100.
Perone, John T.: *See*—
Khoja, Mirza A.; Gutierrez, Louis F.; and Perone, John T., 4,127,231, Cl. 233-1.00R.
Perper, Lloyd J., to Iota Engineering, Inc. Inverter oscillator with current feedback. 4,127,797, Cl. 315-209.00R.
Perry, Edmond S.: *See*—
Chen, Tsang J.; Miller, Raymond S.; and Perry, Edmond S., 4,127,499, Cl. 252-301.170.
Perry, Ronald S. Process for the reduction of free formaldehyde on textile fabrics. 4,127,382, Cl. 8-181.000.
Peters, Harlan J. Placement and support system for strips in concrete. 4,127,352, Cl. 404-74.000.
Petersen, Alfred W.; and Calvin, Robert B., to Stauffer Chemical Company. Process of manufacturing non-gelling suspension liquid fertilizers. 4,127,400, Cl. 71-34.000.
Petersen, Knud W.: *See*—
Egholm, Poul V., 4,127,298, Cl. 294-111.000.
Peterson, Donald L.: *See*—
Peterson, Rollie V.; and Peterson, Donald L., 4,127,063, Cl. 101-3.00R.
Peterson, Richard H.; and Szegedi, Antal. Organ stop tablet mechanism. 4,127,756, Cl. 200-153.00K.
Peterson, Rollie V.; and Peterson, Donald L., to R.D.R. Company. Leather marking tool. 4,127,063, Cl. 101-3.00R.
Peterson, Samuel F., Jr., to Associated Mills, Inc. Portable hydrotherapy bath assembly. 4,127,117, Cl. 128-66.000.

Petocz, Lujza: *See*—
Mikite, Gyula; Petocz, Lujza; Kosoczky, Ibolya; and Grasser, Katalin, 4,127,576, Cl. 424-265.000.
Petrillo, Vincenzo: *See*—
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Petru, Robert B.: *See*—
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Pettis, Charles R., Jr., to Hi-Speed Checkweigher Co., Inc. Large type rotary printer. 4,127,064, Cl. 101-93.180.
Pfizer Inc.: *See*—
Sarges, Reinhard; and Schnur, Rodney C., 4,127,665, Cl. 424-273.00R.
Philip Morris, Incorporated: *See*—
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,127,601, Cl. 260-463.000.
Phillips, Benjamin A., to Allied Chemical Corporation. Absorption heat pump absorber unit and absorption method. 4,127,009, Cl. 62-101.000.
Phillips, Benjamin A., to Allied Chemical Corporation. Heat activated heat pump method and apparatus. 4,127,010, Cl. 62-101.000.
Phillips, Bliss S.: *See*—
Rankin, John C.; and Phillips, Bliss S., 4,127,563, Cl. 536-50.000.
Phillips Petroleum Company: *See*—
Campbell, Robert W., 4,127,713, Cl. 528-391.000.
Hsieh, Henry L., 4,127,710, Cl. 526-133.000.
Richards, Frank P., 4,127,059, Cl. 93-36.50R.
Small, William M., 4,127,165, Cl. 165-162.000.
Smith, Ernest L., 4,127,187, Cl. 206-219.000.
Vanderveen, John W.; and Mills, King L., 4,127,387, Cl. 422-158.000.
Phillips, Robert R.: *See*—
Lundberg, Robert D.; Phillips, Robert R.; Makowski, Henry S.; and Brenner, Douglas, 4,127,546, Cl. 260-27.0BB.
Pickel, Richard A., to Pennwalt Corporation. X-ray generator self centering tube shield. 4,127,776, Cl. 250-520.000.
Pickett, Charles G.: *See*—
Walulik, Albert B.; Charney, John G.; Turk, Donald A.; Lewandowski, Raymond D.; and Pickett, Charles G., 4,127,484, Cl. 210-130.000.
Piconics, Incorporated: *See*—
Slenker, Stephen, 4,127,836, Cl. 336-136.000.
Pieters, Ferdinanders: *See*—
Martin, Thomas B.; and Pieters, Ferdinanders, 4,127,365, Cl. 417-420.000.
Pietreniak, Eugene J.; and Stankavage, Joseph, to Scott Paper Co. Method of manufacturing a dry-formed, embossed adhesively bonded, nonwoven fibrous sheet. 4,127,637, Cl. 264-114.000.
Pigerol, Charles: *See*—
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Chignac, Michel; Grain, Claude; and Pigerol, Charles, 4,127,607, Cl. 260-561.00R.
Pigment Manufacturers of Australia Limited: *See*—
Harris, Dominic R.; and Rowley, Lance E., 4,127,420, Cl. 106-288.00Q.
Pilatowicz, Edward J., to McCulloch Corporation. Carburetor throttle lock. 4,127,090, Cl. 123-98.000.
Pile, David S.; and Vernau, Alan J., to Higgins, James Terence. Electrical resistance welding apparatus. 4,127,759, Cl. 219-56.000.
Pilipenko, Alfred A.: *See*—
Brovman, Mikhail Y.; Marchenko, Ivan K.; Mushenko, Nikolai Y.; Pilipenko, Alfred A.; Tkalenko, Vladimir A.; Romadin, Vladimir N.; and Larin, Gennady P., 4,127,258, Cl. 266-73.000.
Pinhas, Henri: *See*—
Falconnet, Bernard; and Pinhas, Henri, 4,127,661, Cl. 424-250.000.
Pinto, Adolf P. Engine having alternately rotating orbital pistons and cylinders. 4,127,036, Cl. 74-25.000.
Pioneer Electronic Corporation: *See*—
Kinoshita, Shouzo, 4,127,751, Cl. 179-180.000.
Ozawa, Akio; and Seyoshi, Susumu, 4,127,743, Cl. 179-1.00A.
Piret, Norbert L.; and Roever, Wilhelm, to Duisburger Kupferhutte. Process for recovering silver from residues containing silver and lead. 4,127,639, Cl. 423-42.000.
Pitney-Bowes, Inc.: *See*—
Pryor, Roger W., 4,127,772, Cl. 250-237.00G.
Platt, Clark I.; and Clearman, Jack F., to Whirlpool Corporation. Agitator assembly with clothes camming ramp for automatic washer. 4,127,015, Cl. 68-133.000.
Platte, Richard L.: *See*—
Virog, John J., Jr.; Von Hagel, Leo; and Platte, Richard L., 4,127,206, Cl. 215-1.00C.
Plessey Handel und Investments AG: *See*—
Caves, Francis J., 4,127,087, Cl. 123-32.0AE.
Pletts, Donald C., to Car-Bo-Tech Inc. Exhaust recycle mixer. 4,127,093, Cl. 123-119.00A.
Plichta, Zdenek: *See*—
Bleha, Miroslav; and Plichta, Zdenek, 4,127,732, Cl. 560-221.000.
Plummer, Edward. Gun shell converter. 4,126,954, Cl. 42-77.000.
POCLAIN, Societe Anonyme de droit francais: *See*—
Rasigade, Herve P.; and L'Henoret, Francois L., 4,127,814, Cl. 324-208.000.
Podbeltsev, Viktor I.: *See*—
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Podola, Nikolai V.: *See*—
Paton, Boris E.; Lebedev, Vladimir K.; Podola, Nikolai V.; and Obolonsky, Alexei P., 4,127,762, Cl. 219-121.0EM.
Poetsch, Dieter, to Robert Bosch GmbH. System and method for decoding time-division-multiplexed color T.V. signals. 4,127,865, Cl. 358-12.000.
Pogemiller, Thomas A.: *See*—
Horne, Merton A.; and Pogemiller, Thomas A., 4,127,901, Cl. 365-205.000.
Polak's Frutal Works, B.V.: *See*—
Cohen, Amnon M., 4,127,592, Cl. 260-347.800.
Polcaro, Arthur B. Plant care device. 4,126,962, Cl. 47-1.500.
Polysius AG: *See*—
Kreft, Wilfried; and Goldmann, Wolf, 4,127,406, Cl. 75-26.000.
Portnoy, Simon. Clothes dryer rack. 4,127,195, Cl. 211-100.000.
Post Office, The: *See*—
Jackson, Lynden A., 4,127,370, Cl. 425-71.000.
Potter, Robert H., to Auto Specialties Manufacturing Company. Inner tube for screw jack. 4,127,343, Cl. 403-285.000.
Potthoff, Clifford M., to United States of America, Energy. Toroidal core winder. 4,127,238, Cl. 242-4.00A.
PPG Industries, Inc.: *See*—
Carlin, William W., 4,127,643, Cl. 423-607.000.
Thomaswick, Ronald J., 4,127,071, Cl. 105-367.000.
Pracht, Hans J.; and Nirschl, Joseph P., to Procter & Gamble Company, The. Process for making imidazolinium salts, fabric conditioning compositions and methods. 4,127,489, Cl. 252-8.800.
Prem, Dorothy C.: *See*—
Duke, June T.; and Prem, Dorothy C., 4,127,614, Cl. 260-836.000.
Preslar, Donald R.: *See*—
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Beelitz, Howard R.; and Preslar, Donald R., 4,127,860, Cl. 357-15.000.
Preston, Marvin W.; and Barton, Daymon G., to R. & I.C. Alarms, Inc. Power use alarm. 4,127,852, Cl. 340-171.00R.
Pretorius, Willem J., to Lenbo Investments (Proprietary) Limited. Occupational games equipment. 4,127,270, Cl. 273-97.00R.
Pritchard, Roger D. Corner gusset. 4,127,347, Cl. 403-402.000.
Pro-Tech, Inc.: *See*—
Martig, Kenneth W., Jr., 4,127,032, Cl. 73-215.000.
Procter & Gamble Company, The: *See*—
Murphy, Alan P.; and Habermehl, Fred M., III, 4,127,694, Cl. 428-245.000.
Pracht, Hans J.; and Nirschl, Joseph P., 4,127,489, Cl. 252-8.800.
Product Research & Development Corporation: *See*—
Zerbey, John E., 4,127,211, Cl. 220-212.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Leclercq, Phillippe, 4,127,509, Cl. 252-459.000.
Proud, Joseph M., Jr.; Norman, Scott L.; and Fallier, Charles N., Jr., to GTE Laboratories Incorporated. Light activated solid state microwave generators. 4,127,784, Cl. 307-311.000.
Prudhon, Lucien P. E.; and Charil, Jean P. G., to Association des Ouvriers en Instruments de Precision. Apparatus for transmitting and receiving pulses. 4,127,750, Cl. 179-170.00R.
Pryor, Roger W., to Pitney-Bowes, Inc. Moire optical transducer. 4,127,772, Cl. 250-237.00G.
Pullman Incorporated: *See*—
Hackemesser, Larry G.; and Petru, Robert B., 4,127,389, Cl. 422-201.000.
Purdy, Francis W. Vehicle strobe warning light system. 4,127,844, Cl. 340-71.000.
Purland, Donald A., to Ideal Industries, Inc. Digital voltmeter. 4,127,810, Cl. 324-99.00D.
Purolator, Inc.: *See*—
Walulik, Albert B.; Charney, John G.; Turk, Donald A.; Lewandowski, Raymond D.; and Pickett, Charles G., 4,127,484, Cl. 210-130.000.
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Graham, Bruce A.; Puttock, Michael A.; Felauer, Ethel E.; and Neidermyer, Robert W., 4,127,402, Cl. 71-76.000.
Pyne, Charles J., Jr., to P.P.B. Enterprises. Remote-controlled table. 4,126,939, Cl. 32-22.000.
Quackenbush, Carr L. W.; Kolbeck, Andrew G.; and Klein, Richard M., to GTE Laboratories Incorporated. Aluminum borophosphate glass compositions. 4,127,415, Cl. 106-47.00R.
Quaker Oats Company, The: *See*—
Burkwall, Morris P., Jr., 4,127,678, Cl. 426-250.000.
Quang, Pham K., to La Cellophane. Image support for dry development device. 4,127,084, Cl. 118-657.000.
Quinn, James P.: *See*—
Aldcroft, Derek; Barby, Donald; Lovell, Anthony L.; and Quinn, James P., 4,127,641, Cl. 423-339.000.
R.D.R. Company: *See*—
Peterson, Rollie V.; and Peterson, Donald L., 4,127,063, Cl. 101-3.00R.
R. & I.C. Alarms, Inc.: *See*—
Preston, Marvin W.; and Barton, Daymon G., 4,127,852, Cl. 340-171.00R.
R. R. Donnelley & Sons Company: *See*—
Williams, Charles H., 4,127,266, Cl. 271-263.000.
Radebold, Reinhart. Conversion of available energy. 4,127,453, Cl. 204-59.00R.
Radice, Peter F.: *See*—
Ferren, Richard A.; and Radice, Peter F., 4,127,681, Cl. 427-100.000.

Radimer, Kenneth J., to FMC Corporation. Polarizer for the electrolytic production of peroxydisulfates. 4,127,456, Cl. 204-82.000.
Raffel, Jack I.; and Yasaitis, John A., to Massachusetts Institute of Technology. Reading capacitor memories with a variable voltage ramp. 4,127,900, Cl. 365-191.000.
Ramuz, Henri, to Hoffmann-La Roche Inc. Sulphur containing derivatives. 4,127,588, Cl. 260-327.00M.
Randall, Richard R. Displaceable fishhook. 4,126,957, Cl. 43-43.160.
Rank Organisation Limited, The: *See*—
Millward, John D., 4,127,869, Cl. 358-54.000.
Rankin, Billy F., to Burton, Parsons and Company, Inc. Contact lens cleaning solution. 4,127,423, Cl. 134-30.000.
Rankin, John C.; and Phillips, Bliss S., to United States of America, Agriculture. Low pH preparation of cationic starches and flours. 4,127,563, Cl. 536-50.000.
Ranks Hovis McDougall Limited: *See*—
Ratcliffe, John F.; and Barker, Jeffrey G., 4,127,376, Cl. 425-380.000.
Rao, Raghavendra: *See*—
Richter, Gerhard; Mund, Konrad; Gebhardt, Ulrich; and Rao, Raghavendra, 4,126,934, Cl. 29-623.100.
Rasa Shoji K.K.: *See*—
Oikawa, Nisaburo, 4,127,399, Cl. 65-19.000.
Rasigade, Herve P.; and L'Henoret, Francois L., to POCLAIN, Societe Anonyme de droit francais. Detector for discriminating between two metals on a relatively moving member by being positioned at a distance where it senses one but not the other. 4,127,814, Cl. 324-208.000.
Raslavsky, John M., III, to Bunker Ramo Corporation. Bidirectional interface utilizing read-only memory, decoder and multiplexer. 4,127,896, Cl. 364-200.000.
Rasmussen, Hazle M.: *See*—
Gardner, Mark R.; and Rasmussen, Hazle M., 4,127,854, Cl. 340-640.000.
Rasmussen, Hazle Mary: *See*—
Gardner, Mark R.; and Rasmussen, Hazle M., 4,127,854, Cl. 340-640.000.
Rasmussen, Knud A., to SF-Sten A/S. Concrete paving stone and method of manufacturing same. 4,127,349, Cl. 404-45.000.
Ratcliffe, John F.; and Barker, Jeffrey G., to Ranks Hovis McDougall Limited. Method and apparatus for forming a fibrous and layered structure. 4,127,376, Cl. 425-380.000.
Rayburn, Charles C., to Illinois Tool Works Inc. Single pleat metallized film capacitor with sprayed edge terminations. 4,127,890, Cl. 361-309.000.
Rayburn, Charles C., to Illinois Tool Works Inc. Pleated metallized film capacitor with sprayed edge terminations. 4,127,891, Cl. 361-309.000.
Raynolds, Stuart: *See*—
Lore, Albert L.; and Raynolds, Stuart, 4,127,711, Cl. 526-245.000.
Raytheon Company: *See*—
Capps, Charles P.; Hardie, George S.; Ludwig, Arthur C.; Maybell, Michael J.; and Wideman, Gary A., 4,127,857, Cl. 343-754.000.
Chalifour, Henri R.; Rose, Thomas A.; and Goldman, Mark B., 4,127,830, Cl. 333-7.00D.
Schloemann, Ernst F. R. A., 4,127,477, Cl. 209-39.000.
RCA Corporation: *See*—
Adam, Kenneth C.; and Easter, Finis C., 4,127,885, Cl. 361-18.000.
Beelitz, Howard R.; and Preslar, Donald R., 4,127,820, Cl. 325-459.000.
Beelitz, Howard R.; and Preslar, Donald R., 4,127,860, Cl. 357-15.000.
Easter, Finis C., 4,127,886, Cl. 361-18.000.
Fernsler, Ronald E.; Peer, John C.; and Luz, David W., 4,127,875, Cl. 358-190.000.
Katagi, Kazuo, 4,127,873, Cl. 358-166.000.
Marks, Bruce G., 4,127,313, Cl. 339-144.00T.
Shen Lo, Elizabeth, 4,127,872, Cl. 358-128.000.
Reader, Grant W.: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr; Rooney, Clarence S.; and Reader, Grant W., 4,127,584, Cl. 260-306.80D.
Redford, David A., to Texaco Exploration Canada Ltd. Viscous oil recovery method. 4,127,170, Cl. 166-252.000.
Redford, David A.; and Cram, Phillip J., to Texaco Exploration Canada Ltd. Viscous oil recovery method. 4,127,172, Cl. 166-261.000.
Regie Nationale des Usines Renault: *See*—
Chamdru, Jacques; and Guilloton, Marcel, 4,127,159, Cl. 164-200.000.
Leichle, Claude, 4,127,091, Cl. 123-117.00D.
Reichelderfer, Richard F.: *See*—
Bersin, Richard L.; Junkin, James H.; and Reichelderfer, Richard F., 4,127,437, Cl. 156-635.000.
Reick, Franklin G., to Ebert, Michael, a part interest. Hybrid lubricant including halocarbon oil. 4,127,491, Cl. 252-16.000.
Reid, Joyce: *See*—
Hauck, Frederic P.; Reid, Joyce; Narayanan, Venkatachala L.; Cimarusti, Christopher M.; Haugwitz, Rudiger D.; and Sundeen, Joseph E., 4,127,578, Cl. 546-205.000.
Hauck, Frederic P.; and Reid, Joyce, 4,127,717, Cl. 544-154.000.
Reierson, Robert L., to Dow Chemical Company, The. Michael adducts of (substituted) cyclopentadiene and esters: a process therefor and derivatives thereof. 4,127,497, Cl. 252-182.000.
Reinheimer, Gunter: *See*—
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Rembaum, Alan: *See*—
Gray, Harry B.; Rembaum, Alan; and Gupta, Amitava, 4,127,506, Cl. 252-431.00N.
Remington Arms Company, Inc.: *See*—
Gully, Lanny L., 4,127,054, Cl. 86-23.000.
Renner, Alfred: *See*—
Zahir, Abdul-Cader; and Renner, Alfred, 4,127,615, Cl. 260-837.00R.
Republic Steel Corporation: *See*—
Vild, Joseph P.; Cleary, William I.; and Fox, Donald P., 4,127,815, Cl. 324-241.000.
Rest, Frederick G. Shock absorber and assembly. 4,127,269, Cl. 273-85.00D.
Reti, George R., to Bechtel International Corp. Freezer-sublimer for gaseous diffusion plant. 4,127,163, Cl. 165-61.000.
Rexnord Inc.: *See*—
Dieringer, Andrew M.; and Sheperd, Ervin M., 4,127,070, Cl. 104-9.000.
Rezanka, Ivan, to Xerox Corporation. Apparatuses incorporating a composite support member. 4,127,327, Cl. 355-15.000.
Rhines, Warren J.; and Smith, Arnold R., to Bell Telephone Laboratories, Incorporated. Method and apparatus for manufacturing wiring harnesses. 4,126,935, Cl. 29-628.000.
Riblet, Gordon P. Branch line directional coupler having an impedance matching network connected to a port. 4,127,831, Cl. 333-10.000.
Riblet, Gordon P. Directional coupler. 4,127,832, Cl. 333-10.000.
Richard Heinze, Firma: *See*—
Busse, Peter, 4,127,353, Cl. 403-245.000.
Richards, Donald: *See*—
Giles, George R.; and Richards, Donald, 4,127,011, Cl. 62-402.000.
Richards, Frank P., to Phillips Petroleum Company. Method of forming a container. 4,127,059, Cl. 93-36.50R.
Richardson, Harry L. Carrot sorting apparatus. 4,127,193, Cl. 209-539.000.
Richardson, Norman: *See*—
Smith, Malcolm J.; Miles, Peter; Richardson, Norman; and Finan, Michael A., 4,127,483, Cl. 210-58.000.
Richter, Gerhard; Mund, Konrad; Gebhardt, Ulrich; and Rao, Raghavendra, to Siemens Aktiengesellschaft. Method for the manufacture of an electrode for electrochemical cells. 4,126,934, Cl. 29-623.100.
Ridenour, Ralph G. Method of tube fitting assembly with shoulder means. 4,126,929, Cl. 29-523.000.
kingrose, Peter S.: *See*—
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,127,649, Cl. 424-177.000.
Ritter, Henry, Jr. Fire escape net. 4,127,185, Cl. 182-140.000.
Ritzenhoff, Hermann, to Gebruder Seidel KG. Metal tear-off cap. 4,127,209, Cl. 215-254.000.
Roberson, James H., to Crompton & Knowles Corporation. Opening machinery for textile fibers. 4,126,913, Cl. 19-96.000.
Robert Bosch GmbH: *See*—
Fresow, Jurgen; and Wurst, Bert, 4,127,092, Cl. 123-117.00D.
Leiber, Heinz, 4,126,996, Cl. 60-547.00R.
Poetsch, Dieter, 4,127,865, Cl. 358-12.000.
Roberts, John, to Indigrade Limited. Road studs. 4,127,348, Cl. 404-16.000.
Roberts, Karl H.: *See*—
MacRae, David M.; and Roberts, Karl H., 4,127,515, Cl. 521-112.000.
Robinson, Raymond W. Truck bumper and cable winch unit. 4,127,295, Cl. 293-69.00R.
Robot Coupe, S.A.: *See*—
Coggiola, Marcel, 4,127,342, Cl. 403-243.000.
Rocak, Rudolf: *See*—
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Roccaforte, Harry I., to Champion International Corporation. Flip top dispenser box. 4,127,229, Cl. 229-44.0CB.
Rockwell, Harvey M., to Fiat-Allis Construction Machinery, Inc. Fluid motor and control. 4,126,994, Cl. 60-420.000.
Rockwell International Corporation: *See*—
Vasile, Carmine F., 4,127,035, Cl. 73-629.000.
Rodewald, Paul G., to Mobil Oil Corporation. Process for selective production of para dialkyl substituted benzenes. 4,127,616, Cl. 260-671.00R.
Rodex International, Ltd.: *See*—
Brigliadoro, George; and Feller, Herman H., 4,127,081, Cl. 116-22.00A.
Rody, Jean; and Heller, Hansjorg, to Ciba-Geigy Corporation. Light protection agents. 4,127,586, Cl. 260-308.00B.
Roemer, Thomas S.: *See*—
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Rohm and Haas Company: *See*—
Dupont, John A., 4,127,687, Cl. 428-35.000.
Rohr, Franz-Josef; and Holick, Hubert, to Brown, Boveri & Cie AG. Probe for an electrochemical oxygen measurement pickup. 4,127,463, Cl. 204-195.00S.
Rohrle, Manfred, to Mahle GmbH. Liquid-cooled cylinder sleeves. 4,127,058, Cl. 92-169.000.
Rokach, Joshua; Cragoe, Edward J., Jr; Rooney, Clarence S.; and Reader, Grant W., to Merck & Co., Inc. 2,3-Substituted-1,2,5-thiadiazolium salt antimicrobials. 4,127,584, Cl. 260-306.80D.
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Sobotta, Reinhard, 4,127,324, Cl. 353-116.000.
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Romadin, Vladimir N.: *See—*
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Romanzi, Louis, Jr.: *See—*
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Ronald P. Jensen, M.D., Inc.: *See—*
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Rooney, Clarence S.: *See—*
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Roper Corporation: *See—*
Fisher, Gerald C.; and Scanland, Joseph E., 4,126,990, Cl. 56-295.000.
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Rose, Thomas A.: *See—*
Chalifour, Henri R.; Rose, Thomas A.; and Goldman, Mark B., 4,127,830, Cl. 333-7.00D.
Roselli, Sergio, to Saint-Gobain Industries. Heated window with a moisture sensor having a high impedance. 4,127,763, Cl. 219-203.000.
Rosenberg, Eino A.: *See—*
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Rosenthal Technik AG: *See—*
Bauer, Ewald; and Kreuzer, Martin, 4,127,741, Cl. 174-189.000.
Ross, Sidney D.: *See—*
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Rovnyak, George C., to E. R. Squibb & Sons, Inc. Substituted thiopyrano(4,3-b)pyrans. 4,127,667, Cl. 424-275.000.
Rowley, Lance E.: *See—*
Harris, Dominic R.; and Rowley, Lance E., 4,127,420, Cl. 106-288.00Q.
Ruben, Samuel. Process for electro-plating nickel on titanium. 4,127,709, Cl. 429-245.000.
Rule, Norman G.; Berwick, Martin A.; and Contois, Lawrence E., to Eastman Kodak Company. Photoconductive compositions and elements. 4,127,412, Cl. 96-1.0PC.
Ruppen, Bruno: *See—*
Hottinger, Conrad; Ruppen, Bruno; Bohler, Pierre; and Singenberger, Emil, 4,127,055, Cl. 89-33.00D.
Rushby, Robert J.: *See—*
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Russell, Clayton C.; and Witte, Donald H., to Fox Pool Corporation. Floating therapy pool. 4,126,905, Cl. 4-172.000.
Russell, John D.: *See—*
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Larmit, Adrianus J. F., 4,127,148, Cl. 139-435.000.
Rybczyk, Joseph A., to National Computer Systems, Inc. Encoding printing device. 4,127,065, Cl. 101-111.000.
S.A.E.S. Getters S.p.A.: *See—*
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Sabat, Arthur G., to Chrysler Corporation. Master cylinder reservoir. 4,127,210, Cl. 220-22.000.
SAFT - Societe des Accumulateurs Fixes et de Traction: *See—*
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Saint-Gobain Industries: *See—*
Flemmer, Dieter; Halberschmidt, Friedrich; and Feiten, Karl-Josef, 4,127,683, Cl. 427-287.000.
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Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method of color correction including transforming co-ordinate systems of color separation signals. 4,127,871, Cl. 358-80.000.
Sakaue, Tatsuo: *See—*
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Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.
Sanborn, William L., to Dynapol. Melt processing recovery of high purity polymeric antioxidants. 4,127,564, Cl. 528-481.000.
Sandoz, Inc.: *See—*
Galantay, Eugene E., 4,127,658, Cl. 424-248.570.
Hardtmann, Goetz E.; and Coppola, Gary M., 4,127,574, Cl. 546-90.000.
Sandoz Ltd.: *See—*
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Sankyo Electric Company Limited: *See—*
Kondo, Ryohei, 4,127,218, Cl. 221-124.000.
Sapkus, Jurgis; and Lewis, J. Stephen, to Mattel, Inc. Doll stand. 4,127,251, Cl. 248-176.000.
Sarges, Reinhard; and Schnur, Rodney C., to Pfizer Inc. Thienohydantoin derivatives. 4,127,665, Cl. 424-273.00R.
Sarhan, Ali: *See—*
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Sarich, David D. Manual linkage. 4,126,987, Cl. 56-208.000.
Sarto, Jorma O., to Chrysler Corporation. Counterbalanced throttle for I.C. engine. 4,127,627, Cl. 261-41.00B.
Sasaki, Masao: *See—*
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Sato, Robert N., to Hughes Aircraft Company. Scan mirror position determining system. 4,127,781, Cl. 250-562.000.
Sato, Toyomi; Kobayashi, Toshiyuki; Mayama, Takeshi; and Okada, Akira, to Meiji Seika Kaisha, Ltd. Process for preparation of stable amorphous macrolide antibiotic solids. 4,127,647, Cl. 424-78.000.
Satoh, Kenji: *See—*
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Schick, Karl G.; and Huber, Calvin O. Amperometric-non-enzymatic method of determining sugars and other polyhydroxy compounds. 4,127,448, Cl. 204-1.00T.
Schiller, Alfred E. Device for supplying an imprinting apparatus with a recording tape means. 4,127,858, Cl. 346-136.000.
Schlau, Floyd E.; Disko, Harry; and Brand, Derek A., to Marvin Glass & Associates. Stamp design kit. 4,127,377, Cl. 425-385.000.
Schleifenbaum, Karl; Koenig, Claus; Thurmann, Wilhelm; and Munich, Rolf, to Meteor-Siegen Apparatbau Paul Schmeck. Filing strip. 4,127,690, Cl. 428-40.000.
Schloemann, Ernst F. R. A., to Raytheon Company. High capacity materials separation apparatus. 4,127,477, Cl. 209-39.000.
Schmadel, Edmund: *See—*
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Schmid, Manfred; Sommer, Werner; and Vinnemann, Antonius. Stitch selector control means. 4,127,012, Cl. 66-75.200.
Schmidt, Fred L.: *See—*
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Schmidt, Jakob E. Brassiere having simulated nipples and attachable-detachable nipple simulators. 4,127,128, Cl. 128-425.000.
Schmidt, Thomas; Kramer, Wolfgang; and Kranz, Eckart, to Bayer Aktiengesellschaft. Preparation of 1-phenyl-2,2,2-trihalogeno-ethanol esters. 4,127,728, Cl. 560-124.000.
Schmitz, Rudolf: *See—*
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Schmoll, George F., III, to CBS Inc. Pedal tone generator having means for automatically producing tone patterns based on tonic note. 4,127,048, Cl. 84-1.030.
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Schubert, Howard W.: *See—*
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Schulde, Felix; Obendorf, Johann; and Kulisch, Volker, to Veba-Chemie Aktiengesellschaft. Method of preparing coatings. 4,127,562, Cl. 528-94.000.

Schulz, Bernhard; Grassner, Hans; Jaeger, Peter; and Nohe, Heinz, to BASF Aktiengesellschaft. Manufacture of symmetrical carotenoids. 4,127,455, Cl. 204-78.000.

Schunk, George J. Oral dispensing device. 4,127,126, Cl. 128-234.000.

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Schwartz, Jack, to Admiral Corporation. Viewer adaptable remote control apparatus for TV receiver. 4,127,876, Cl. 358-194.000.

Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, to TMC Corporation. Device for skis. 4,127,284, Cl. 280-605.000.

Scott Paper Co.: *See—*
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Scott, Peter H.: *See—*
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Sedlak, John M.: *See—*
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Seeger, Josef: *See—*
Muller, Rudolf; Seeger, Josef; and Fink, Konrad, 4,127,257, Cl. 266-44.000.

Self, Richard E., to Control Components, Inc. High energy loss device. 4,127,146, Cl. 137-625.300.

Senften, David A., to Hunter Engineering Company. Wheel alignment apparatus and method. 4,126,943, Cl. 33-228.000.

Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation: *See—*
Falconnet, Bernard; and Pinhas, Henri, 4,127,661, Cl. 424-250.000.

Ses, Incorporated: *See—*
Ullery, Lee R., Jr., 4,127,424, Cl. 136-89.00P.

Sesoko, Shinichi, to Fuji Xerox Co., Ltd. Developer sealing device for xerographic copying machine. 4,127,083, Cl. 118-653.000.

Sewell, Buddy A.: *See—*
Miller, James D.; and Sewell, Buddy A., 4,127,014, Cl. 68-13.00R.

Seyoshi, Susumu: *See—*
Ozawa, Akio; and Seyoshi, Susumu, 4,127,743, Cl. 179-1.00A.

SF-Sten A/S: *See—*
Rasmussen, Knud A., 4,127,349, Cl. 404-45.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Gandolfi, Luciano; and Rocak, Rudolf, 4,126,931, Cl. 29-578.000.

Shanks, Ian A., to National Research Development Corporation. Liquid crystal waveform displays. 4,127,848, Cl. 340-324.00M.

Sharkey, Melvin. Adjustable compression roller apparatus. 4,127,066, Cl. 101-132.000.

Sharp Kabushiki Kaisha: *See—*
Kawabata, Nobuo, 4,127,082, Cl. 118-652.000.

Sharp, Silas S, to Du Pont de Nemours, E. I., and Company. Miticidal mixtures and method utilizing a macrotetrolide compound. 4,127,668, Cl. 424-279.000.

Sharpe, James R.; and Free, Dustin L., to Dow Chemical Company, The. Method for treating a well using a chemical wash with fluid loss control. 4,127,174, Cl. 166-291.000.

Shaw Industries, Inc.: *See—*
Miller, James D.; and Sewell, Buddy A., 4,127,014, Cl. 68-13.00R.

Sheldahl, Inc.: *See—*
LaMarche, Frederick W., 4,127,740, Cl. 174-68.500.
Lowthorp, Blaine G., 4,127,752, Cl. 200-5.00A.
Lowthorp, Blaine G., 4,127,758, Cl. 200-340.000.

Shell Oil Company: *See—*
Anderson, Elmer A.; Kim, Leo; and Tang, Sunny C., 4,127,594, Cl. 260-348.370.
Carr, John B.; and Durham, Harry G., 4,127,656, Cl. 424-248.500.
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Shen Lo, Elizabeth, to RCA Corporation. Novel amino siloxane lubricants. 4,127,872, Cl. 358-128.000.

Shepard, Dennis D. Artificial lens and method of locating on the cornea. 4,126,904, Cl. 3-13.000.

Sheperd, Ervin M.: *See—*
Dieringer, Andrew M.; and Sheperd, Ervin M., 4,127,070, Cl. 104-9.000.

Sherlock, Hugh P.; Golderg, Allan M.; Ciupke, Werner W.; and Brody, George, to American Hospital Supply Corp. Skin fold caliper. 4,127,112, Cl. 128-2.00S.

Sherlock, Margaret H., to Schering Corporation. Cyanoalkyl-5-(substituted triphenylmethyl)picolinate. 4,127,662, Cl. 424-266.000.

Sherman, John A.; and Wardell, Peter S., to Canadian Appliance Manufacturing Company Limited. Integral water fill system for humidifiers. 4,127,620, Cl. 261-26.000.

Shibano, Takashi: *See—*
Hirakawa, Koichi; Shibano, Takashi; and Masuda, Kazuo, 4,127,695, Cl. 428-371.000.

Shimizu, Haruo: *See—*
Inoue, Shigeo; Miyamoto, Norioki; and Shimizu, Haruo, 4,127,654, Cl. 424-216.000.

Shimizu, Shigeo; and Itoh, Akihiko, to Kohjin Co., Ltd. Composite fiber. 4,127,698, Cl. 428-373.000.

Shimokura, Akihiro: *See—*
Takahashi, Yuji; and Shimokura, Akihiro, 4,126,920, Cl. 29-243.520.

Shin-Asahigawa Co., Ltd.: *See—*
Motai, Takeji, 4,127,686, Cl. 427-351.000.

Shirasawa, Hidenori: *See—*
Hirano, Hiroshi; Kobayashi, Hiroshi; Jizaimaru, Jiro; and Shirasawa, Hidenori, 4,127,427, Cl. 148-36.000.

Shirn, George A.; and Ross, Sidney D., to Sprague Electric Company. Making a capacitor employing a temporary solid mask in the porous anode. 4,127,680, Cl. 427-80.000.

Shishido, Toetsu: *See—*
Yajima, Seishi; Shishido, Toetsu; Omori, Mamoru; Kayano, Hideo; and Hamano, Masaaki, 4,127,411, Cl. 75-236.000.

Shizuki, Tatsuhiko: *See—*
Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, 4,127,590, Cl. 260-346.740.

Shuey, David R.; and Slomcenski, Robert J., to Xerox Corporation. Shielded electrometer whose output is used to control width of pulses fed back to the shield and associated battery test circuitry. 4,127,806, Cl. 324-32.000.

Shumrak, George K.; and Davis, Paul, to Sweetheart Plastics, Inc. Plastic food container. 4,127,189, Cl. 206-520.000.

Sibirsky Nauchno-Issledovatelsky Institut Energetiki: *See—*
Lukashov, Eduard S.; and Yakobson, Marina K., 4,127,805, Cl. 323-120.000.

Sick, Erwin, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Optical apparatus. 4,127,771, Cl. 250-221.000.

Siekmeier, David A.: *See—*
Arndt, Kenneth E.; Otto, Lonnie E., Jr.; and Siekmeier, David A., 4,127,181, Cl. 180-14.00R.

Siemens Aktiengesellschaft: *See—*
Auinger, Herbert, 4,127,787, Cl. 310-184.000.
Bialkowski, Gunter, 4,127,755, Cl. 200-144.00B.
Binder, Johann, 4,127,777, Cl. 250-548.000.
Franetzki, Manfred, 4,127,115, Cl. 128-2.080.
Hassler, Dieter, 4,127,842, Cl. 340-3.00D.
Martens, Hans, deceased; Martens, Harald, legal heir; Martens, Rainer, legal heir; Martens, Hans-Wolfgang, legal heir; Martens, Gunter, legal heir; Martens, Sigrid, legal heir; Martens, Hannelore, legal heir; and Martens, Helmut, legal heir, 4,127,452, Cl. 204-38.00A.
Richter, Gerhard; Mund, Konrad; Gebhardt, Ulrich; and Rao, Raghavendra, 4,126,934, Cl. 29-623.100.
Volkrodt, Wolfgang, 4,127,786, Cl. 310-156.000.

Silen, Almer. Tornado protection building. 4,126,972, Cl. 52-34.000.

Simcoe, Kent W.: *See—*
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., 4,127,897, Cl. 364-900.000.

Simone, Richard B., to National Semiconductor Corporation. Educational calculator. 4,126,949, Cl. 35-31.00C.

Simpson, Robert D.: *See—*
Boone, Jimmie H.; and Simpson, Robert D., 4,127,248, Cl. 244-180.000.

Sineokov, Alexandr P.: *See—*
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.

Singenberger, Emil: *See—*
Hottinger, Conrad; Ruppen, Bruno; Bohler, Pierre; and Singenberger, Emil, 4,127,055, Cl. 89-33.00D.

Singer Company, The: *See—*
Johnson, Ralph E., 4,127,076, Cl. 112-158.00R.

Singer, Joseph, Jr., to Ni-Tec, Inc. Multiple-channel tubular devices. 4,127,398, Cl. 65-4.00A.

Singh, Ajaib: *See—*
Kaizerman, Samuel; and Singh, Ajaib, 4,127,542, Cl. 260-18.0PF.

Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, to Warner-Lambert Company. Isoxazol amides of 4-hydroxy-6H-thieno[2,3-b]thiopyran-5-carboxylic acid-7,7-dioxide. 4,127,585, Cl. 260-307.00H.

Slenker, Stephen, to Piconics, Incorporated. Tunable inductor coil. 4,127,836, Cl. 336-136.000.

Slivenko, Victor: *See—*
Akins, Robert J.; and Slivenko, Victor, 4,126,924, Cl. 29-423.000.

Slomcenski, Robert J.: *See—*
Shuey, David R.; and Slomcenski, Robert J., 4,127,806, Cl. 324-32.000.

Small, Robert J., to Ashland Oil, Inc. Process for the reductive methylation of an acid hydrazide. 4,127,611, Cl. 260-583.00B.

Small, William M., to Phillips Petroleum Company. Angular rod baffle. 4,127,165, Cl. 165-162.000.
Smarook, Walter H., to Union Carbide Corporation. Hydrogel dough composition for fabrication of foamed articles. 4,127,547, Cl. 521-98.000.
Smirnov, Evgeny S.: *See—*
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.
Smith, Arnold R.: *See—*
Rhines, Warren J.; and Smith, Arnold R., 4,126,935, Cl. 29-628.000.
Smith, Charles N., to Water-Tronics, Inc. Ionization chamber for water treatment system. 4,127,467, Cl. 204-275.000.
Smith, Donald A.: *See—*
Mehta, Arun K.; and Smith, Donald A., 4,127,237, Cl. 241-58.000.
Smith, Ernest L., to Phillips Petroleum Company. Package and method of package use. 4,127,187, Cl. 206-219.000.
Smith International, Inc.: *See—*
Evans, Robert F., 4,127,043, Cl. 76-108.00A.
Smith, Kelly L.: *See—*
Wong, Patrick S. L.; Smith, Kelly L.; and Michaels, Alan S., 4,127,127, Cl. 128-260.000.
Smith, Malcolm J.; Miles, Peter; Richardson, Norman; and Finan, Michael A., to Ciba Geigy (UK) Limited. Treatment of aqueous systems. 4,127,483, Cl. 210-58.000.
Smith, Peter A. C.: *See—*
Sutherland, Thomas H.; and Smith, Peter A. C., 4,127,618, Cl. 260-879.000.
Smith, Russell I. Rotary mechanism with resilient drive means. 4,127,367, Cl. 418-36.000.
Smith, Vernon O.; and Abbott, Ronald E., to Overhead Door Corporation. Torsion hold-down. 4,126,909, Cl. 14-71.300.
SmithKline Corporation: *See—*
Snader, Kenneth M.; and Willis, Chester R., 4,127,646, Cl. 424-45.000.
Smiths Industries Limited: *See—*
Vallins, David J., 4,127,850, Cl. 340-324.00A.
Snader, Kenneth M.; and Willis, Chester R., to SmithKline Corporation. Substituted 2H-pyran-2,6(3H)-dione derivatives. 4,127,646, Cl. 424-45.000.
Snider, James A., to Snider, James Allen. Slow close hydrant check valve. 4,127,142, Cl. 137-68.00R.
Snider, James Allen: *See—*
Snider, James A., 4,127,142, Cl. 137-68.00R.
Snyder, James E.: *See—*
Dansbach, David J.; and Snyder, James E., 4,127,845, Cl. 340-151.000.
Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Still projector with spare projection lamp. 4,127,323, Cl. 353-61.000.
Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Dual photographic slide projector. 4,127,324, Cl. 353-116.000.
Societe Anonyme dite: HEXACHIME: *See—*
Cognacq, Jean-Claude, 4,127,671, Cl. 424-311.000.
Societe Anonyme Francaise du Ferodo: *See—*
Neveux, Rene E., 4,127,838, Cl. 337-380.000.
Societe Bourguignonne d'Applications Plastiques: *See—*
Hubert, Guy; and Vandenhove, Charles, 4,127,207, Cl. 215-1.00C.
Societe de Vente de L'Aluminium Pechiney: *See—*
Nicoud, Jean-Claude, 4,127,426, Cl. 148-11.50A.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Baliguet, Michel P., 4,127,812, Cl. 324-174.000.
Soder, Robert, to Ebauches S.A. Method of manufacture, by means of thermoplastic moulding, of elements made of crystallizable plastic material with a strengthening load. 4,127,554, Cl. 260-37.00N.
Solar Works, Inc.: *See—*
Greene, Michael E., 4,127,104, Cl. 126-271.000.
Sommer, Werner: *See—*
Schmid, Manfred; Sommer, Werner; and Vinnemann, Antonius, 4,127,012, Cl. 66-75.200.
Sony Corporation: *See—*
Ichigaya, Hiroshi, 4,127,049, Cl. 84-1.180.
Mogi, Takao, 4,127,818, Cl. 325-418.000.
Mogi, Takao; and Okada, Hisao, 4,127,822, Cl. 325-464.000.
Okada, Hisao; and Mogi, Takao, 4,127,821, Cl. 325-464.000.
Yamashita, Noriyuki, 4,127,866, Cl. 358-19.000.
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., to Spanel, Abram N. Yarn adjuster for controlling evenness of yarn tufts. 4,127,078, Cl. 112-266.000.
Spangler, Richard M.; Burmeister, Eugene V.; Cada, Frank E.; Covington, Wayne F.; Christopher, Chris J.; Judd, Myles A.; Wenninger, Freddie W.; Watson, Robert E.; and Simcoe, Kent W., to Hewlett-Packard Company. Programmable calculator having extended input-/output capability. 4,127,897, Cl. 364-900.000.
Sparrows Contract Services Limited: *See—*
Clethero, Percy A., 4,127,199, Cl. 214-1.00H.
Sperry Rand Corporation: *See—*
Horne, Merton A.; and Pogemiller, Thomas A., 4,127,901, Cl. 365-205.000.
Minden, Henry T., 4,127,764, Cl. 219-216.000.
Spicar, Erich; and Yngvesson, Hans, to Asea AB. Groove seal. 4,127,276, Cl. 277-188.00R.
Splawn, Gary L. Suspension support unit for large objects. 4,127,252, Cl. 248-333.000.
Sprague Electric Company: *See—*
Shirn, George A.; and Ross, Sidney D., 4,127,680, Cl. 427-80.000.
Sprotbery, Donald E.: *See—*
Jacobson, Alexander D.; Grinberg, Jan; Sprotbery, Donald E.; and Boswell, Donald D., 4,127,322, Cl. 353-31.000.
Sproul, Robert D.; and Todd, Guillermo E., to United States of America, Air Force. Engine chip detector. 4,127,808, Cl. 324-65.00R.
Stadalsky, John F.: *See—*
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Churchill, Charles M.; Allen, George A.; and Stadalsky, John F., 4,127,550, Cl. 260-29.60E.
Staffe, Adolf; Lehment, Klaus-Friedrich; and Backhaus, Wilhelm, to Bayer Aktiengesellschaft. Preparation of dichlorophene. 4,127,735, Cl. 568-726.000.
Stafford, Richard G.: *See—*
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Stahl, Quade R.; and Ney, Joseph H., to Meloy Laboratories, Inc. Process and system for measuring sulfur dioxide pollution. 4,127,386, Cl. 23-232.00R.
Stamicarbon, B.V.: *See—*
Alfenaar, Marinus; and van de Moesdijk, Cornelis G. M., 4,127,468, Cl. 204-284.000.
Paulen, Hendrikus J. G., 4,127,461, Cl. 204-159.140.
Standard Oil Company: *See—*
Bateman, Mark E.; and Palmer, Jeffrey T., 4,127,418, Cl. 106-213.000.
Dempsey, Robert E.; and Throne, James L., 4,127,631, Cl. 264-92.000.
Duke, June T.; and Prem, Dorothy C., 4,127,614, Cl. 260-836.000.
Standard Oil Company (Indiana): *See—*
Osborne, Bodwell D., 4,127,005, Cl. 405-227.000.
Stankavage, Joseph: *See—*
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Stankewitz, Hans W.: *See—*
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Stauffer Chemical Company: *See—*
Petersen, Alfred W.; and Calvin, Robert B., 4,127,400, Cl. 71-34.000.
Stegelitz, Wilhelmus J., to Dominion Engineering Works Limited. Paper machine wire draping system. 4,127,441, Cl. 162-200.000.
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Lorenz, Walter; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,127,653, Cl. 424-200.000.
Stephan, Norbert, to Motoren-Und Turbinen-Union Munchen GmbH. Turbomachine rotor having a sealing ring. 4,127,359, Cl. 416-198.00A.
Stephens, Dennis W.: *See—*
Blucher, Joseph T.; Crosby, Stephen R.; and Stephens, Dennis W., 4,127,045, Cl. 83-796.000.
Sterling Drug Inc.: *See—*
Gelotte, Karl O.; Zalay, Andrew W.; and Bell, Malcolm R., 4,127,583, Cl. 546-340.000.
Vere, Mary A., 4,127,221, Cl. 222-153.000.
Wentland, Mark P.; and Albertson, Noel F., 4,127,577, Cl. 546-97.000.
Stern, Erica, to Genesco, Inc. Brassiere. 4,127,135, Cl. 128-425.000.
Stevens, G. Wesley, to Degelman Industries Ltd. Adjustable deflection limiting element for trailing arm assembly. 4,127,341, Cl. 403-113.000.
Steverlynck, Patrick A., to Weefautomaten Picanol N.V. Rapier driving device on rapier looms. 4,127,150, Cl. 139-449.000.
Stewart, James A., to GTE Automatic Electric Laboratories, Incorporated. Method and apparatus employing a pulsed carrier in generating single sideband signals for FDM transmission. 4,127,746, Cl. 179-15.0FS.
Stewart, John K.; and von Beckmann, Helmuth, to Canron Corp. Railroad track shifting machine with shift limiting device. 4,127,069, Cl. 104-7.00R.
Stifter, Francis J. Monitoring system for aircraft master switch. 4,127,847, Cl. 340-530.000.
Stockel, Dieter; Schneider, Friedrich; and Heiss, Hermann, to G. Rau. Metallic material with additives embedded therein and method for producing the same. 4,127,700, Cl. 428-558.000.
Stokes, Dallas F., to Colgate-Palmolive Company. Non-phosphate automatic dishwasher detergent. 4,127,496, Cl. 252-102.000.
Straitz, John F., III, to Combustion Unlimited Incorporated. Ignition system for waste gas flares with gas compensation. 4,127,380, Cl. 431-15.000.
Strasilla, Dieter. Apparatus for the propulsion of a person by the force of wind, especially for skiers. 4,127,247, Cl. 244-152.000.
Stringfellow, Martin S.; and Waldo, Michael K., to Motorola, Inc. Temperature compensating apparatus for microwave oscillators and the like. 4,127,834, Cl. 333-83.00T.
Stritzl, Karl: *See—*
Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, 4,127,284, Cl. 280-605.000.
Strohmeyer, Robert W. Combination flower box and fire escape. 4,127,184, Cl. 182-70.000.

Stroud, Henry J. F.: *See—*
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Stubenruss, Paul. Reciprocating fluid stroke motors with automatic control. 4,127,057, Cl. 91-52.000.
Sugaya, Yoshio: *See—*
Yamabe, Masaaki; Munekata, Seiji; Sugaya, Yoshio; and Jitsugiri, Yukio, 4,127,731, Cl. 560-192.000.
Suggitt, Robert M.; and Herbstman, Sheldon, to Texaco Inc. Hydrocracking alkylaromatic-containing hydrocarbons at mild cracking conditions and then subjecting the alkylaromatic hydrocarbon to alkyl transfer. 4,127,471, Cl. 208-60.000.
Sugiura, Tsuneo: *See—*
Kato, Kimio; Hattori, Mitsuhiro; and Sugiura, Tsuneo, 4,127,363, Cl. 417-269.000.
Sumi, Shizuo, to Nippondenso Co., Ltd. Fuel injection pump assembly for diesel engine. 4,127,366, Cl. 417-494.000.
Sumitomo Chemical Company, Limited: *See—*
Matsushima, Shunsuke; and Kawai, Kiyoshi, 4,127,623, Cl. 264-13.000.
Sumitomo Metal Industries, Ltd.: *See—*
Hiroshima, Tatsuo; and Hirota, Tetsuya, 4,127,813, Cl. 324-202.000.
Sumiyoshi, Masaharu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,127,095, Cl. 123-30.00D.
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Migitaka, Wataru; Sunago, Hirofumi; Ogawa, Yukiyosi; and Nisihata, Takanori, 4,127,472, Cl. 208-87.000.
Sundeen, Joseph E.: *See—*
Hauck, Frederic P.; Reid, Joyce; Narayanan, Venkatachala L.; Cimarusti, Christopher M.; Haugwitz, Rudiger D.; and Sundeen, Joseph E., 4,127,578, Cl. 546-205.000.
Sunnen, Robert M., to Emko Company, The. Dispenser for dispensing pills or tablets in a predetermined order. 4,127,190, Cl. 206-535.000.
Superior Electric Company, The: *See—*
Leachman, Frank A., 4,127,285, Cl. 283-38.000.
Leenhouts, Albert C., 4,127,801, Cl. 318-696.000.
Susnjara, Kenneth J., to Thermwood Corporation. Method for assembling a backer member to a shell member. 4,127,431, Cl. 156-282.000.
Sutherland, Thomas H.; and Smith, Peter A. C., to Exxon Research & Engineering Co. Modified vinyl chloride polymers. 4,127,618, Cl. 260-879.000.
Suzuki, Hideaki; Ono, Tomoyoshi; Yamamoto, Wataru; and Yamamoto, Naoki, to Teijin Limited. Fibrous material for emulsion breaker and method for manufacturing it. 4,127,500, Cl. 252-358.000.
Suzuki, Yasuo: *See—*
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Svetly, Michael J.: *See—*
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Svoboda, Josef: *See—*
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Sweeney, William M., to Texaco Inc. Fuel oil blending to improve pour reduction. 4,127,138, Cl. 137-13.000.
Sweeney, William M., to Texaco Inc. Low pour gas oils. 4,127,139, Cl. 137-13.000.
Sweeney, William M., to Texaco Inc. Crude oil compositions having low pour points. 4,127,140, Cl. 137-13.000.
Sweetheart Plastics, Inc.: *See—*
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Swessel, John A., Jr.: *See—*
Josemans, Leonardus J.; and Swessel, John A., Jr., 4,127,754, Cl. 200-67.00G.
Swick, Edwin G., to ITW — Illinois Tool Works. Wire clamping device. 4,127,250, Cl. 248-71.000.
Swinson, Robert C., to Hercules Incorporated. Non-built liquid detergents. 4,127,495, Cl. 252-89.00R.
Sybron Corporation: *See—*
Ellis, Franklin H.; and Thibodeau, Edward A., 4,126,937, Cl. 32-15.000.
Symons, Philip C.; and Amato, Carmelo J., to Energy Development Associates. Refuelable electrical energy storage device. 4,127,701, Cl. 429-19.000.
Syrowik, Daniel J., to Romanski, Lon H. Vehicle interior cover panel means. 4,127,301, Cl. 296-37.160.
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Peterson, Richard H.; and Szegedi, Antal, 4,127,756, Cl. 200-153.00K.
Szuhaj, Bernard F.; and Yaste, Joseph R., to Central Soya Company, Inc. Pan release agent. 4,127,419, Cl. 106-243.000.
Tachikawa, Shiro: *See—*
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Tachiki, Shigeo: *See—*
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Taiheiyo Engineering Incorporated: *See—*
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Takacs, Miklos: *See—*
Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, 4,127,388, Cl. 422-258.000.
Takahashi, Katsuhiko; and Doi, Hachiro, to Fuso Keigokin Co., Ltd. Lawn mower. 4,126,985, Cl. 56-13.600.
Takahashi, Yuji; and Shimokura, Akihiro, to Tokico Ltd. Shock absorber with bead-type retainer and method and apparatus for the assembly thereof. 4,126,920, Cl. 29-243.520.
Takamatsu, Takehiro: *See—*
Iwasawa, Mineo; Sakaue, Tatsuo; Date, Hikaru; and Takamatsu, Takehiro, 4,127,874, Cl. 358-167.000.
Takeda Riken Kogyo Kabushikikaisha: *See—*
Niki, Shoji, 4,127,809, Cl. 324-78.00R.
Takemoto, Kiyochika; Suzuki, Yasuo; Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, to Lion Hamigaki Kabushiki Kaisha; and Kaijo Denki Kabushiki Kaisha. Devices for transmitting ultrasonic waves to teeth. 4,127,125, Cl. 128-172.100.
Takenaka, Toichi: *See—*
Murakami, Masuo; Murase, Kiyoshi; Niigata, Kunihiro; Tachikawa, Shiro; and Takenaka, Toichi, 4,127,675, Cl. 424-330.000.
Takesawa, Seiichi: *See—*
Kuwano, Satoshi; Yabuzaki, Shun-ichi; Kitaichi, Satoshi; Takesawa, Seiichi; Minabe, Hitoshi; and Nakamura, Tsuneshi, 4,127,432, Cl. 156-297.000.
Takeuchi, Akihiko, to Nippon Gakki Seizo Kabushiki Kaisha. Brass wind musical instrument. 4,127,050, Cl. 84-387.000.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, 4,127,714, Cl. 536-17.000.
Takimoto, Masatami, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel evaporation control system. 4,127,097, Cl. 123-136.000.
Tamba, Alberto: *See—*
Azzerri, Nazzareno; and Tamba, Alberto, 4,127,450, Cl. 204-29.000.
Tamura, Tatsuo: *See—*
Yamada, Yasuo; Saito, Junichi; Tamura, Tatsuo; and Kurahashi, Yoshio, 4,127,673, Cl. 424-322.000.
Tanaka, Hideo: *See—*
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Tanaka, Hironari: *See—*
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Tanaka, Taro: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,127,095, Cl. 123-30.00D.
Tanaka, Toshio; Honda, Juichi; Mimori, Sadao; and Ikegami, Kazutoshi, to Hitachi, Ltd. Safety test circuit for combustion control apparatus. 4,127,887, Cl. 361-86.000.
Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 4,127,095, Cl. 123-30.00D.
Tang, Sunny C.: *See—*
Anderson, Elmer A.; Kim, Leo; and Tang, Sunny C., 4,127,594, Cl. 260-348.370.
Kim, Leo; and Tang, Sunny C., 4,127,593, Cl. 260-348.370.
Taraschi, Frederic T.: *See—*
McCullough, Michael J.; and Taraschi, Frederic T., 4,127,280, Cl. 280-5.00D.
Tavadian, Levon A.: *See—*
Bljumberg, Erna A.; Vytnov, Gennady F.; Isaev, Oleg V.; Krylov, Oleg V.; Maslov, Sergei A.; Margolis, Lia Y.; Sineokov, Alexandr P.; Smirnov, Evgeny S.; Tavadian, Levon A.; Emanuel, Nikolai M.; Grobova, Kapitalina I.; and Krylova, Valentina V., 4,127,603, Cl. 562-533.000.
Taylor, Alfred J.: *See—*
Lumby, Roland J.; North, Bernard; and Taylor, Alfred J., 4,127,416, Cl. 106-73.200.
Tefft, Franklin A.; Adams, Don L.; and Cotton, Lou S., to United Technologies Corporation. Helicopter pitch rate feedback bias for pitch axis maneuvering stability and load feel. 4,127,245, Cl. 244-17.130.
Teijin Limited: *See—*
Suzuki, Hideaki; Ono, Tomoyoshi; Yamamoto, Wataru; and Yamamoto, Naoki, 4,127,500, Cl. 252-358.000.
Teledyne Industries, Inc.: *See—*
Megy, Joseph A., 4,127,409, Cl. 75-84.400.
Teramachi, Hiroshi. Unlimited sliding ball spline assembly. 4,127,309, Cl. 308-6.00C.
Tesa S.A.: *See—*
Lendi, Georges; and Zanier, Adriano U., 4,126,940, Cl. 33-147.00F.
Texaco Development Corporation: *See—*
Waddill, Harold G., 4,127,514, Cl. 528-93.000.
Texaco Exploration Canada Ltd.: *See—*
Redford, David A., 4,127,170, Cl. 166-252.000.
Redford, David A.; and Cram, Phillip J., 4,127,172, Cl. 166-261.000.
Texaco Inc.: *See—*
Allen, Joseph C., 4,127,171, Cl. 166-260.000.
Suggitt, Robert M.; and Herbstman, Sheldon, 4,127,471, Cl. 208-60.000.
Sweeney, William M., 4,127,138, Cl. 137-13.000.
Sweeney, William M., 4,127,139, Cl. 137-13.000.
Sweeney, William M., 4,127,140, Cl. 137-13.000.
Texas Alkyls, Inc.: *See—*
Fannin, Loyd W.; and Malpass, Dennis B., 4,127,507, Cl. 252-431.00R.
Thayer, Orla E. Flexible tube valve. 4,127,052, Cl. 84-388.000.

Thayer, Stephen C. Automatic and accurate passenger counter with storage and retrieval. 4,127,766, Cl. 235-92.0PK.
Thermwood Corporation: *See—*
Susnjara, Kenneth J., 4,127,431, Cl. 156-282.000.
Thibodeau, Edward A.: *See—*
Ellis, Franklin H.; and Thibodeau, Edward A., 4,126,937, Cl. 32-15.000.
Thiele, Duane L.: *See—*
Keller, Lynn L.; and Thiele, Duane L., 4,127,204, Cl. 214-394.000.
Thies, Helmut: *See—*
Berger, Bernd; Thies, Helmut; Mucke, Gerd; and Neuschutz, Eberhard, 4,127,027, Cl. 73-144.000.
Thir, Basil: *See—*
Newkirk, David D.; Thir, Basil; and Login, Robert B., 4,127,490, Cl. 252-8.900.
Thiruvengadam, Alagu P.; and Hochrein, Ambrose A., Jr., to Daedalean Associates, Inc. Homogenizing method and apparatus. 4,127,332, Cl. 366-131.000.
Thole, Ulf L., to AB Volvo. Transport system for automatically controlled motor-driven transport cars and transport car for said transport system. 4,127,182, Cl. 180-98.000.
Thomas, Claude E. Coupon clip. 4,126,916, Cl. 24-67.900.
Thomas, Herbert: *See—*
Wollweber, Hartmund; Kolling, Heinrich; and Thomas, Herbert, 4,127,670, Cl. 424-300.000.
Thomaswick, Ronald J., to PPG Industries, Inc. Railway car shipping support structure. 4,127,071, Cl. 105-367.000.
Thompson, John T.: *See—*
Gillemot, George W., 4,127,748, Cl. 179-98.000.
Thomson-CSF: *See—*
Cachier, Gerard, 4,126,932, Cl. 29-580.000.
Thomson, John D. Holder for an implement. 4,127,296, Cl. 294-19.00R.
Throne, James L.: *See—*
Dempsey, Robert E.; and Throne, James L., 4,127,631, Cl. 264-92.000.
Thurmann, Wilhelm: *See—*
Schleifenbaum, Karl; Koenig, Claus; Thurmann, Wilhelm; and Munnich, Rolf, 4,127,690, Cl. 428-40.000.
Tiemann, Jerome J.: *See—*
Lederman, Frank L.; and Tiemann, Jerome J., 4,127,034, Cl. 73-626.000.
Tilton, Robert W., to GSW Limited — GSW Limitee. Windowed oven door having shield raising and door locking system. 4,127,101, Cl. 126-200.000.
Timex Corporation: *See—*
Leibowitz, Marshall, 4,127,853, Cl. 340-336.000.
Timmins, Cyril; Conway, Henry L.; and Stroud, Henry J. F., to British Gas Corporation. Method and apparatus for vaporizing hydrocarbon based liquids. 4,127,393, Cl. 48-213.000.
Timmler, Helmut; Draber, Wilfried; and Eue, Ludwig, to Bayer Aktiengesellschaft. 4-Amino-1,2,4-triazin-5-one compounds and herbicidal compositions. 4,127,404, Cl. 71-90.000.
Tipps, Thomas R.: *See—*
Murphy, Richard D., 4,127,356, Cl. 415-2.000.
Tiroler Rohren- und Metallwerke Aktiengesellschaft Hall in Tirol (Austria): *See—*
Mutschlechner, Hermann, 4,127,290, Cl. 285-343.000.
Tkalenko, Vladimir A.: *See—*
Brovman, Mikhail Y.; Marchenko, Ivan K.; Mushenko, Nikolai Y.; Pilipenko, Alfred A.; Tkalenko, Vladimir A.; Romadin, Vladimir N.; and Larin, Gennady P., 4,127,258, Cl. 266-73.000.
TMC Corporation: *See—*
Schweizer, Gottfried; Kubelka, Axel; Stritzl, Karl; and Svoboda, Josef, 4,127,284, Cl. 280-605.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokuo; and Wada, Shozo, 4,127,504, Cl. 252-429.00B.
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokyo; and Wada, Shozo, 4,127,505, Cl. 252-429.00B.
Tobias, Dezso: *See—*
Maczko, Gabor; Tobias, Dezso; Bozzay, Laszlo; Takacs, Miklos; and Kovesdi, Rudolf, 4,127,388, Cl. 422-258.000.
Todd, Guillermo E.: *See—*
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Toeniskoetter, Richard H.: *See—*
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Tokico Ltd.: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
Iwasawa, Mineo; Sakaue, Tatsuo; Date, Hikaru; and Takamatsu, Takehiro, 4,127,874, Cl. 358-167.000.
Kurata, Mamoru, 4,127,863, Cl. 357-38.000.
Tomic, Ernst A., to Du Pont de Nemours, E. I., and Company. Inorganic cement grouting system for use in anchoring a bolt in a hole. 4,127,001, Cl. 405-261.000.
Tomimoto, Tetsuo: *See—*
Nagaoka, Yoshitomi; Tomimoto, Tetsuo; and Sasaki, Reiichi, 4,127,868, Cl. 358-29.000.
Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. Method of and apparatus for composing digital tone signals. 4,127,047, Cl. 84-1.010.
Tomizawa, Masaharu: *See—*
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,127,473, Cl. 208-130.000.
Toner, Thomas J. Trailer hitch monitor. 4,127,855, Cl. 340-687.000.
Tongret, Stewart: *See—*
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Toraskar, Krantikumar V.: *See—*
Long, Donald E.; Rushby, Robert J.; and Toraskar, Krantikumar V., 4,127,800, Cl. 318-685.000.
Toray Industries, Inc.: *See—*
Okamoto, Miyoshi, 4,127,696, Cl. 428-373.000.
Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha. Preparation of benzothiazolylsulfenamides. 4,127,454, Cl. 204-59.00R.
Tortorici, Domenic P.; and Tsengouras, Demetrios A., to Halle Industries, Inc. Air pre-cleaner. 4,127,396, Cl. 55-396.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Kato, Yasuo; Kakiuchi, Motoo; Arai, Takashi; and Okawa, Kunio, 4,127,841, Cl. 338-128.000.
Toshimitsu, Yoshihiko: *See—*
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Totten, Patsy L.: *See—*
Watson, Jimmie L.; and Totten, Patsy L., 4,127,482, Cl. 210-53.000.
Touchard, Remy, to SAFT - Societe des Accumulateurs Fixes et de Traction. Cylindrical electric cell. 4,127,704, Cl. 429-94.000.
Townsend Engineering Company: *See—*
Townsend, Ray T., 4,127,096, Cl. 123-41.560.
Townsend, Ray T., to Townsend Engineering Company. Internal combustion engine. 4,127,096, Cl. 123-41.560.
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Endo, Seiji; Kashihara, Takao; Osako, Akitada; Shizuki, Tatsuhiko; and Ikegami, Tadashi, 4,127,590, Cl. 260-346.740.
Toyo Kohan Co., Ltd.: *See—*
Matsuno, Kenji, 4,127,158, Cl. 164-81.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Takimoto, Masatami, 4,127,097, Cl. 123-136.000.
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Tra, Josef: *See—*
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Travnicek, Edward A.: *See—*
Cuffe, Patricia M.; LeBoeuf, Albert R.; and Travnicek, Edward A., 4,127,638, Cl. 264-331.000.
Trepanier, Donald L.: *See—*
Britton, Thomas C.; and Trepanier, Donald L., 4,127,572, Cl. 424-248.500.
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Tromp, Herman R. C.: *See—*
Bezemer, Jan A.; and Tromp, Herman R. C., 4,127,833, Cl. 333-72.000.
TRW Inc.: *See—*
McKee, William H., 4,127,315, Cl. 339-103.00B.
McKee, William H.; and Witte, Roy, 4,127,316, Cl. 339-103.00R.
Tsengouras, Demetrios A.: *See—*
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Tsunekawa, Tokuichi: *See—*
Ohtaki, Shohei; Tsunekawa, Tokuichi; Nakamura, Zenzo; and Uchiyama, Takashi, 4,127,325, Cl. 354-32.000.
Tsutsumi, Saburo, to Nissan Motor Company, Ltd. Internal combustion engine having main and auxiliary combustion chambers. 4,127,089, Cl. 123-75.00B.
Tubin, E. Sam; and Tongret, Stewart, to Tubin, E. Sam. Secondary oil recovery method and system. 4,127,169, Cl. 166-250.000.
Tull, Roger J.; Hartman, George D.; and Weinstock, Leonard M., to Merck & Co., Inc. Derivatives of thiadiazolo[3,4-d]pyrimidine. 4,127,721, Cl. 544-254.000.
Turk, Donald A.: *See—*
Walulik, Albert B.; Charney, John G.; Turk, Donald A.; Lewandowski, Raymond D.; and Pickett, Charles G., 4,127,484, Cl. 210-130.000.
Turner, Bernus G., to Boeing Company, The. Self-depressurizing metering valve. 4,127,144, Cl. 137-596.000.
Twizell, Geoffrey: *See—*
Watson, William B.; Winter, Richard G.; and Twizell, Geoffrey, 4,127,392, Cl. 48-197.00R.
Tyree, Christopher W., to Bunker Ramo Corporation. Electrical connectors which may be shortened to provide fewer contacts. 4,127,317, Cl. 339-134.000.
Tyree, Lewis, Jr. Method and apparatus for cooling material using liquid CO_2. 4,127,008, Cl. 62-62.000.
Uchida, Mitsuo; Fushiki, Takeshi; and Awata, Mitsuru, to Mitsubishi Chemical Industries Ltd. Molded gypsum product and process for preparing the same. 4,127,628, Cl. 264-42.000.
Uchin, Stanley P. Strap carrying device. 4,127,223, Cl. 224-55.000.
Uchiyama, Takashi: *See—*
Ohtaki, Shohei; Tsunekawa, Tokuichi; Nakamura, Zenzo; and Uchiyama, Takashi, 4,127,325, Cl. 354-32.000.
Ueda, Shigeru; Yokoyama, Shinichi; Nakata, Yoshinori; Hasegawa, Yoshihisa; Yoshida, Ryoichi; Maekawa, Yousuke; Yoshida, Yuji; and Makino, Kazuo, to Agency of Industrial Science & Technology. Apparatus for transfer of powder into high-pressure vessel and method for transfer. 4,127,151, Cl. 141-5.000.

Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokuo; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of a catalyst component for use in the polymerization of alphaolefins. 4,127,504, Cl. 252-429.00B.
Ueno, Hiroshi; Inaba, Naomi; Makishima, Tokyo; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of a catalyst component for use in the polymerization of α-olefins. 4,127,505, Cl. 252-429.00B.
Ueno, Sadayasu: *See—*
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Uhl, Karl: *See—*
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Ukida, Masashi: *See—*
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Ullery, Lee R., Jr., to Ses, Incorporated. Photovoltaic cell array. 4,127,424, Cl. 136-89.00P.
UMC Electronics Company: *See—*
Weaver, Preston R., 4,127,037, Cl. 74-89.150.
Umezawa, Hamao; Takeuchi, Tomio; Hamada, Masa; Ishizuka, Masaaki; Naganawa, Hiroshi; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Anthracycline glycosides. 4,127,714, Cl. 536-17.000.
Union Carbide Corporation: *See—*
Smarook, Walter H., 4,127,547, Cl. 521-98.000.
Union Oil Company of California: *See—*
Young, Dean A., 4,127,469, Cl. 208-11.00R.
Union Special Corporation: *See—*
Adamski, Maximilian, Jr.; and Kuhn, John A., 4,127,075, Cl. 112-122.000.
Uniroyal, Inc.: *See—*
Graham, Bruce A.; Puttock, Michael A.; Felauer, Ethel E.; and Neidermyer, Robert W., 4,127,402, Cl. 71-76.000.
Uniroyal Ltd.: *See—*
Graham, Bruce A.; Puttock, Michael A.; Felauer, Ethel E.; and Neidermyer, Robert W., 4,127,402, Cl. 71-76.000.
United States Gypsum Company: *See—*
Gauthier, Ray J., 4,127,635, Cl. 264-102.000.
United States of America
Agriculture: *See—*
Craig, James C., Jr.; Kozempel, Michael F.; and Elias, Stanley, 4,127,597, Cl. 260-428.500.
Rankin, John C.; and Phillips, Bliss S., 4,127,563, Cl. 536-50.000.
Air Force: *See—*
Barry, James D., 4,127,827, Cl. 331-94.50C.
Breaux, Onezime P., 4,127,804, Cl. 322-2.00A.
Sproul, Robert D.; and Todd, Guillermo E., 4,127,808, Cl. 324-65.00R.
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Coffield, George G., Jr.; and Beug, Dennis L., 4,126,955, Cl. 42-78.000.
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Logan, B. Grant, 4,127,442, Cl. 176-3.000.
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Wetch, Joseph R.; Dieckamp, Herman M.; and Wilson, Lewis A., 4,127,443, Cl. 176-22.000.
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Warren, Jeffrey M.; and Blessing, Gerald V., 4,127,033, Cl. 73-622.000.
U.S. Philips Corporation: *See—*
Asselman, George A. A.; Fokker, Herman; and Meijer, Roelf J., 4,126,995, Cl. 60-524.000.
Jochems, Pieter J. W., 4,127,864, Cl. 357-44.000.
Kostlin, Heiner; Jost, Rudiger; and Auding, Hans, 4,127,789, Cl. 313-112.000.
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Mestdagh, Gilbert E., 4,127,883, Cl. 360-105.000.
Middel, Andreas P., 4,127,851, Cl. 340-324.0AD.
van Lent, Johannes G., 4,127,791, Cl. 313-403.000.
Verstegen, Judicus M. P. J.; van de Spijker, Willebrordus H. M. M.; and Verlijsdonk, Johannus G., 4,127,498, Cl. 252-301.40F.
United States Surgical Corporation: *See—*
Green, David T., 4,127,227, Cl. 227-83.000.
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Tefft, Franklin A.; Adams, Don L.; and Cotton, Lou S., 4,127,245, Cl. 244-17.130.
Universite d'Orleans: *See—*
Buzas, Andre; and Lavielle, Gilbert, 4,127,666, Cl. 424-274.000.
University of Utah: *See—*
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Bundy, Gordon L., 4,127,569, Cl. 260-239.0BF.
Nelson, Norman A., 4,127,733, Cl. 568-807.000.
Yankee, Ernest W., 4,127,723, Cl. 560-121.000.
Yankee, Ernest W., 4,127,724, Cl. 560-121.000.
Yankee, Ernest W., 4,127,725, Cl. 560-121.000.
Yankee, Ernest W., 4,127,726, Cl. 560-121.000.
Ushakoff, Alexis E., to Cordis Corporation. Gas-absorbing pacer and method of fabrication. 4,127,134, Cl. 128-419.00P.
Ushitani, Kenji; Noda, Fumiyoshi; and Ikeda, Toshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ceramic fiber molding for manifold reactors. 4,127,556, Cl. 252-62.000.
Uskokovic, Milan R.: *See—*
Chadha, Naresh K.; Partridge, John J., Jr.; and Uskokovic, Milan R., 4,127,736, Cl. 568-838.000.
Usui, Tugumoto: *See—*
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Vaillancourt, Vincent L., to Johnson & Johnson. Hub assembly for use in the filtration of fluids and method of making the same. 4,127,131, Cl. 128-221.000.
Vallins, David J., to Smiths Industries Limited. Scanning display apparatus. 4,127,850, Cl. 340-324.00A.
Van Auken, Thomas V.: *See—*
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,127,601, Cl. 260-463.000.
van de Moesdijk, Cornelis G. M.: *See—*
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van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating implement. 4,127,074, Cl. 111-85.000.
van der Lely, Cornelis. Soil cultivating implements. 4,127,175, Cl. 172-50.000.
van der Lely, Cornelis. Soil cultivating implements. 4,127,176, Cl. 172-51.000.
van der Lely, Cornelis. Soil cultivating implements. 4,127,177, Cl. 172-59.000.
Vanderspurt, Thomas H., to Celanese Corporation. Silver-cadmium alloy catalyst. 4,127,508, Cl. 252-457.000.
Vanderveen, John W.; and Mills, King L., to Phillips Petroleum Company. Radial secondary gas flow carbon black reactor. 4,127,387, Cl. 422-158.000.
van de Spijker, Willebrordus H. M. M.: *See—*
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van Lent, Johannes G., to U.S. Philips Corporation. Cathode ray tube shadow mask with slotted apertures. 4,127,791, Cl. 313-403.000.
van Staveren, Hendricus C.: *See—*
Oosterling, Pieter A.; and van Staveren, Hendricus C., 4,126,988, Cl. 56-295.000.
Oosterling, Pieter A.; and van Staveren, Hendricus C., 4,126,989, Cl. 56-295.000.
Varian Associates, Inc.: *See—*
Moon, Ronald L., 4,126,930, Cl. 29-572.000.
Vasile, Carmine F., to Rockwell International Corporation. Electromagnetic transducer. 4,127,035, Cl. 73-629.000.
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Wang, Richard H. S.; and Zannucci, Joseph S., 4,127,501, Cl. 252-403.000.
Zenda, Richard J.: *See*—
Malacheski, Joseph J.; Stelmack, Edward; and Zenda, Richard J., 4,127,339, Cl. 401-132.000.
Zenn, Hans: *See*—
Erlenmayer, Udo; Gropp, Reinhard; and Zenn, Hans, 4,127,145, Cl. 137-599.000.
Zerbey, John E., to Product Research & Development Corporation. Drinking cup and support. 4,127,211, Cl. 220-212.000.
Zieg, Stanley W.; Hill, John P., Jr.; and McCrary, John S., to John D. Hollingsworth on Wheels, Inc. Apparatus for stripping card flats and the like. 4,126,915, Cl. 19-111.000.
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Zinga, William L., 4,127,143, Cl. 137-592.000.
Zinga, William L., to Zinga Industries Inc. Tank diffuser. 4,127,143, Cl. 137-592.000.
Zinnes, Harold: *See*—
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,127,585, Cl. 260-307.00H.
Zodrow, Rudolf, to Jagenberg-Werke AG. Labeling station of a machine for labeling objects, especially bottles. 4,127,435, Cl. 156-568.000.

LIST OF REISSUE PATENTEES

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PATENTS WERE ISSUED ON THE 28TH DAY OF NOVEMBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aidlin, Joseph W.: *See—*
Kessler, Saul, Re. 29,852, Cl. 260-590.00R.

Becker, Otto A. Insulating flexible composite element and purge system. Re. 29,851, Cl. 55-267.000.

Breskin Industries Corp.: *See—*
Labarre, Maurice, Re. 29,850, Cl. 222-541.000.

Calver, Leonard H.: *See—*
Davies, Robert W.; Thornton, Leonard; Veness, Maxwell F.; and Calver, Leonard H., Re. 29,847, Cl. 93-51.00R.

Cole, Sylvan: *See—*
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, Re. 29,846, Cl. 70-278.000.

Davies, Robert W.; Thornton, Leonard; Veness, Maxwell F.; and Calver, Leonard H., to Molins Limited. Packing machines. Re. 29,847, Cl. 93-51.00R.

DEC International, Inc.: *See—*
Schluckbier, Gary W.; and Luick, Donald W., Re. 29,848, Cl. 119-14.080.

Feagin, Frederick E.: *See—*
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, Re. 29,846, Cl. 70-278.000.

Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, to Monitron Industries, Inc. Electronic combination lock and system. Re. 29,846, Cl. 70-278.000.

Kessler, Saul, to Aidlin, Joseph W. Protective coating for articles. Re. 29,852, Cl. 260-590.00R.

Labarre, Maurice, to Breskin Industries Corp. Closure spout having tear-out portion. Re. 29,850, Cl. 222-541.000.

Luick, Donald W.: *See—*
Schluckbier, Gary W.; and Luick, Donald W., Re. 29,848, Cl. 119-14.080.

Messner, Daryle: *See—*
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Molins Limited: *See—*
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Monitron Industries, Inc.: *See—*
Genest, Leonard J.; Feagin, Frederick E.; Cole, Sylvan; and Messner, Daryle, Re. 29,846, Cl. 70-278.000.

Perl, Richard L., to Tappan Company, The. Gas igniter. Re. 29,853, Cl. 219-270.000.

Quigniot, Andre. Leading link type independent systems. Re. 29,849, Cl. 180-73.00C.

Schluckbier, Gary W.; and Luick, Donald W., to DEC International, Inc. Detacher mechanism for milking unit. Re. 29,848, Cl. 119-14.080.

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Anderson, Frederic W., to Burchell Nursery, Inc., The. Almond tree (1-B-475). 4,335, 11-28-78, Cl. 30.000.

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Fuchigami, Torao T.: *See—*
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Koutantzis, Konstantinos I., to Pan American Plant Company. African violet named Pink Ulli. 4,337, 11-28-78, Cl. 69.000.

Mayer, Eugene W.; and Fuchigami, Torao T., to O. M. Scott & Sons Company, The. Kentucky bluegrass. 4,336, 11-28-78, Cl. 88.000.

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Armbruster, John T., to American Optical Corporation. Drawing attachment for a microscope. 250,412, 11-28-78, Cl. D16-57.000.

Babros, Ron; and Minsky, Norm, to Dart Industries Inc. Fryer. 250,385, 11-28-78, Cl. D7-94.000.

Baker, Duane E. Fireplace. 250,418, 11-28-78, Cl. D23-97.000.

Batson, Bradley L.; Evans, Alfred C.; Schiller, Robert J.; and Covey, Laird F., to Veeder Industries Inc. Gasoline pump. 250,429, 11-28-78, Cl. D52-2.00A.

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Bennett, Lester H., to Bon-Aire Industries, Inc. Spotlight. 250,428, 11-28-78, Cl. D48-20.00K.

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Ornatek, Bridget C., 250,370, Cl. D6-168.000.

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Prizlow, Alfred J.; and Grosso, Raymond A., 250,374, Cl. D6-31.000.
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Weil, Eric L. Stackable tape tray. 250,396, 11-28-78, Cl. D9-187.000.

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86	4,127,403
90	4,127,404
93	4,127,405

CLASS 72

21	4,127,019
68	4,127,020
313	4,127,021
367	4,127,022
405	4,127,023

CLASS 73

27 R	4,127,024
38	4,127,025
49.5	4,127,026
144	4,127,027
194 B	4,127,028
194 F	4,127,029
194 R	4,127,030
204 FR	4,127,031
215	4,127,032
622	4,127,033
626	4,127,034
629	4,127,035

CLASS 74

25	4,127,036
89.15	4,127,037
217 B	4,127,038
232	4,127,039
240	4,127,040
411	4,127,041
520	4,127,042

CLASS 75

26	4,127,406
53	4,127,407
76	4,127,408
84.4	4,127,409
171	4,127,410
236	4,127,411

CLASS 76

108 A	4,127,043

CLASS 83

446	4,127,044
796	4,127,045
798	4,127,046

CLASS 84

1.01	4,127,047
1.03	4,127,048
1.18	4,127,049
387	4,127,050
388	4,127,052
402	4,127,053
423	4,127,051

CLASS 86

23	4,127,054

CLASS 89

33 D	4,127,055
128	4,127,056

CLASS 91

52	4,127,057

CLASS 92

169	4,127,058

CLASS 93

36.5 R	4,127,059
51 R	Re.29,847

CLASS 96

1 PC	4,127,412
56	4,127,413
67	4,127,414

CLASS 99

419	4,127,060

CLASS 100

100	4,127,061
215	4,127,062

CLASS 101

3 R	4,127,063
93.18	4,127,064
111	4,127,065
132	4,127,066
426	4,127,067

CLASS 102

23	4,127,068

CLASS 104

7 R	4,127,069
9	4,127,070

CLASS 105

367	4,127,071

CLASS 106

47 R	4,127,415
73.2	4,127,416
99	4,127,417
213	4,127,418
243	4,127,419
288 Q	4,127,420
298	4,127,421
308 Q	4,127,422

CLASS 108

111	4,127,072

CLASS 111

7	4,127,073
85	4,127,074

CLASS 112

122	4,127,075
158 R	4,127,076
258	4,127,077
266	4,127,078

CLASS 114

74 A	4,127,079

CLASS 115

76	4,127,080

CLASS 116

22 A	4,127,081

CLASS 118

652	4,127,082
653	4,127,083
657	4,127,084

CLASS 119

14.08	Re.29,848

CLASS 122

18	4,127,085

CLASS 123

30 D	4,127,095
32 AE	4,127,087
32 EE	4,127,088
32 EL	4,127,086
41.56	4,127,096
75 B	4,127,089
98	4,127,090
117 D	4,127,091
	4,127,092
119 A	4,127,093
136	4,127,097
185 BA	4,127,098
229	4,127,094

CLASS 126

110 B	4,127,100
137	4,127,099
200	4,127,101
270	4,127,102
271	4,127,103
	4,127,104
	4,127,105
299 D	4,127,106
361	4,127,107
369	4,127,108

CLASS 128

1 R	4,127,109
2 G	4,127,111
2 P	4,127,110
2 S	4,127,112
2 W	4,127,113
2.05 N	4,127,114
2.08	4,127,115
57	4,127,116
66	4,127,117
79	4,127,118
92 A	4,127,119
134	4,127,120
142 R	4,127,121
142.2	4,127,129
142.5	4,127,122
142.7	4,127,130
145.8	4,127,123
156	4,127,124
172.1	4,127,125
221	4,127,131
234	4,127,126
260	4,127,127
287	4,127,132
339	4,127,133
419 P	4,127,134
425	4,127,128
	4,127,135

CLASS 131

140 R	4,127,136

CLASS 134

30	4,127,423
174	4,127,137

CLASS 136

89 NB	4,127,738
89 P	4,127,424
89 PC	4,127,425

CLASS 137

13	4,127,138
	4,127,139
	4,127,140
15	4,127,141
68 R	4,127,142
592	4,127,143
596	4,127,144
599	4,127,145
625.3	4,127,146

CLASS 139

11	4,127,147
435	4,127,148
	4,127,149
449	4,127,150

CLASS 141

5	4,127,151

CLASS 144

3 D	4,127,152
	4,127,154
3 R	4,127,153

CLASS 148

11.5 A	4,127,426
36	4,127,427
38	4,127,428
113	4,127,429

CLASS 150

1.7	4,127,155

CLASS 152

323	4,127,166

CLASS 156

244.14	4,127,430
282	4,127,431
297	4,127,432
498	4,127,433
526	4,127,434
568	4,127,435
630	4,127,436
635	4,127,437
666	4,127,438

CLASS 160

179	4,127,156

CLASS 162

40	4,127,439
190	4,127,440
200	4,127,441

CLASS 164

12	4,127,157
81	4,127,158
200	4,127,159

CLASS 165

1	4,127,160
34	4,127,161
50	4,127,162
61	4,127,163
133	4,127,164
162	4,127,165

CLASS 166

85	4,127,167
123	4,127,168
250	4,127,169
252	4,127,170
260	4,127,171
261	4,127,172
276	4,127,173
291	4,127,174

CLASS 172

50	4,127,175
51	4,127,176
59	4,127,177
198	4,127,178
565	4,127,179

CLASS 174

45 R	4,127,739
68.5	4,127,740
189	4,127,741

CLASS 176

3	4,127,442
22	4,127,443
38	4,127,444
87	4,127,445

CLASS 179

1 A	4,127,743
2 EB	4,127,744
15 BA	4,127,745
15 FS	4,127,746
16 F	4,127,747
18 FC	4,127,742
98	4,127,748
110 A	4,127,749
170 R	4,127,750
180	4,127,751

CLASS 180

6.48	4,127,180
14 R	4,127,181
73 C	Re.29,849
98	4,127,182
148	4,127,186

CLASS 181

224	4,127,183

CLASS 182

70	4,127,184
140	4,127,185

CLASS 195

80 R	4,127,446
116	4,127,447

CLASS 200

5 A	4,127,752
48 KB	4,127,753
67 G	4,127,754
144 B	4,127,755
153 K	4,127,756
254	4,127,757
340	4,127,758

CLASS 204

1 T	4,127,448
2.1	4,127,449
29	4,127,450
38 A	4,127,451
	4,127,452

59 R 4,127,453
4,127,454
78 4,127,455
82 4,127,456
98 4,127,457
109 4,127,458
129.5 4,127,459
159.13 4,127,460
159.14 4,127,461
195 R 4,127,462
195 S 4,127,463
4,127,464
228 4,127,465
248 4,127,466
275 4,127,467
284 4,127,468

CLASS 206

219 4,127,187
453 4,127,188
520 4,127,189
535 4,127,190
574 4,127,191
586 4,127,192

CLASS 208

11 R 4,127,469
58 4,127,470
60 4,127,471
87 4,127,472
130 4,127,473
207 4,127,474
310 R 4,127,475

CLASS 209

3 4,127,476
39 4,127,477
240 4,127,478
273 4,127,479
457 4,127,480
539 4,127,193
578 4,127,194

CLASS 210

22 A 4,127,481
53 4,127,482
58 4,127,483
130 4,127,484
169 4,127,485
219 4,127,486
350 4,127,487
519 4,127,488

CLASS 211

100 4,127,195
207 4,127,196

CLASS 212

122 4,127,197

CLASS 214

1 BT 4,127,198
1 H 4,127,199
75 H 4,127,200
85 4,127,201
4,127,202
145 A 4,127,203
394 4,127,204
652 4,127,205

CLASS 215

1 C 4,127,206
4,127,207
253 4,127,208
254 4,127,209

CLASS 219

56 4,127,759
121 EM 4,127,762
121 L 4,127,761
121 P 4,127,760
203 4,127,763
216 4,127,764
218 4,127,765
270 Re.29,853

CLASS 220

22 4,127,210
212 4,127,211
254 4,127,212
268 4,127,213
314 4,127,215
334 4,127,214
374 4,127,216

CLASS 221

94 4,127,217
124 4,127,218
303 4,127,219

CLASS 222

1 4,127,220
153 4,127,221
541 Re.29,850

CLASS 223

101 4,127,222

CLASS 224

55 4,127,223

CLASS 226

3 4,127,224
118 4,127,225

CLASS 227

69 4,127,226
83 4,127,227

CLASS 229

15 4,127,304
16 R 4,127,228
44 CB 4,127,229
45 R 4,127,230

CLASS 233

1 R 4,127,231

CLASS 235

92 FL 4,127,767
92 PK 4,127,766
304.1 4,127,768
419 4,127,232
456 4,127,769
474 4,127,770

CLASS 239

8 4,127,233
558 4,127,234

CLASS 241

1 4,127,235
37.5 4,127,236
58 4,127,237

CLASS 242

4 A 4,127,238
55.19 A 4,127,239
107.4 A 4,127,240
156.2 4,127,241
199 4,127,242

CLASS 244

3.21 4,127,243
7 R 4,127,244
17.13 4,127,245
138 R 4,127,246
152 4,127,247
180 4,127,248
191 4,127,249

CLASS 248

71 4,127,250
176 4,127,251
333 4,127,252
453 4,127,253

CLASS 249

22 4,127,254

CLASS 250

221 4,127,771
237 G 4,127,772
461 R 4,127,773
476 4,127,774
490 4,127,775
520 4,127,776
548 4,127,777
550 4,127,778
558 4,127,779
559 4,127,780
562 4,127,781

CLASS 252

8.8 4,127,489
8.9 4,127,490
16 4,127,491
51.5 A 4,127,492
4,127,493
62 4,127,556
77 4,127,494
89 R 4,127,495
102 4,127,496
182 4,127,497
301.17 4,127,499
301.4 F 4,127,498
358 4,127,500
403 4,127,501
408 4,127,502
429 B 4,127,504
4,127,505
429 R 4,127,503
431 N 4,127,506
431 R 4,127,507
457 4,127,508
459 4,127,509
462 4,127,510
518 4,127,511
544 4,127,512

CLASS 254

133 R 4,127,255

CLASS 260

8 4,127,517
4,127,518
4,127,519
4,127,520
4,127,521
4,127,522
4,127,523
4,127,524
4,127,525
4,127,526
4,127,527
4,127,528
4,127,529
4,127,530
4,127,531
4,127,532
4,127,533
4,127,534
4,127,535
4,127,536
4,127,537
4,127,538
4,127,539
4,127,540
4,127,541
17.5 4,127,544
18 PF 4,127,542
23 R 4,127,543
27 BB 4,127,545
4,127,546
29.2 TN 4,127,548
29.6 E 4,127,549
4,127,550
31.6 4,127,551
31.8 R 4,127,552
33.2 R 4,127,553
37 N 4,127,554
4,127,555
40 R 4,127,557
42.18 4,127,558
45.75 B 4,127,559
174 4,127,567
239 A 4,127,568
239 BF 4,127,569
239.1 4,127,570
4,127,571
306.8 D 4,127,584
307 H 4,127,585
308 B 4,127,586
308 R 4,127,587
327 M 4,127,588
340.5 AS 4,127,589
346.74 4,127,590
346.75 4,127,591
347.8 4,127,592
348.37 4,127,593
4,127,594
352 4,127,595
397.3 4,127,596
428.5 4,127,597
448.2 E 4,127,598
453 AB 4,127,599
455 A 4,127,600
463 4,127,601
506 4,127,602
544 C 4,127,605
556 A 4,127,606
561 R 4,127,607
563 R 4,127,609
567.6 P 4,127,608
582 4,127,610
583 B 4,127,611
586 R 4,127,612
590 R Re.29,852
671 R 4,127,616
836 4,127,614
837 R 4,127,615
878 R 4,127,617
879 4,127,618
889 4,127,619

CLASS 261

26 4,127,620
41 B 4,127,627
118 4,127,621

CLASS 264

13 4,127,622
4,127,623
23 4,127,624
28 4,127,625
30 4,127,626
42 4,127,628
63 4,127,629
65 4,127,630
92 4,127,631
94 4,127,632
97 4,127,633
102 4,127,635
105 4,127,634
113 4,127,636
114 4,127,637
331 4,127,638

CLASS 266

44 4,127,257
57 4,127,256
73 4,127,258
83 4,127,259

CLASS 269

139 4,127,260

CLASS 270

55 4,127,261

CLASS 271

12 4,127,262
96 4,127,263
191 4,127,264
260 4,127,265
263 4,127,266

CLASS 273

26 A 4,127,267
58 C 4,127,268
85 D 4,127,269
97 R 4,127,270
100 4,127,271
102 R 4,127,272
245 4,127,273

CLASS 274

23 R 4,127,274

CLASS 277

6 4,127,275
188 R 4,127,276
204 4,127,277
207 R 4,127,278

CLASS 279

1 TS 4,127,279

CLASS 280

5 D 4,127,280
47.13 B 4,127,281
87.04 A 4,127,282
411 R 4,127,283
605 4,127,284

CLASS 283

38 4,127,285

CLASS 285

41 4,127,286
55 4,127,287
136 4,127,288
322 4,127,289
343 4,127,290

CLASS 292

54 4,127,291
246 4,127,292
251 4,127,293

CLASS 293

62 4,127,294
69 R 4,127,295

CLASS 294

19 R 4,127,296
86.2 4,127,297
111 4,127,298

CLASS 296

23 MC 4,127,299
28 R 4,127,300
37.16 4,127,301
137 B 4,127,302

CLASS 299

11 4,127,303

CLASS 301

36 R 4,127,305
127 4,127,306

CLASS 302

23 4,127,307

CLASS 303

35 4,127,308

CLASS 307

10 R 4,127,782
297 4,127,783
311 4,127,784

CLASS 308

6 C 4,127,309
36.1 4,127,310

CLASS 310

89 4,127,785
156 4,127,786
184 4,127,787
328 4,127,788

CLASS 312

209 4,127,311

CLASS 313

112 4,127,789
174 4,127,790
403 4,127,791
500 4,127,792

CLASS 315

80 4,127,793
169 R 4,127,794
209 R 4,127,797
4,127,798
210 4,127,795
395 4,127,796

CLASS 318

373 4,127,799
685 4,127,800
696 4,127,801
4,127,802

CLASS 320

2 4,127,803

CLASS 322

2 A 4,127,804

CLASS 323

120 4,127,805

CLASS 324

32 4,127,806
51 4,127,807
65 R 4,127,808
78 R 4,127,809
99 D 4,127,810
130 4,127,811
174 4,127,812
202 4,127,813
208 4,127,814
241 4,127,815

CLASS 325

67 4,127,816
364 4,127,817
418 4,127,818
423 4,127,819
459 4,127,820
464 4,127,821
4,127,822

CLASS 328

130 4,127,823
138 4,127,824

CLASS 329

103 4,127,825

CLASS 331

94.5 C 4,127,826
4,127,827
4,127,828

CLASS 333

2 4,127,829
7 D 4,127,830
10 4,127,831
4,127,832
72 4,127,833
83 T 4,127,834

CLASS 335

266 4,127,835

CLASS 336

136 4,127,836

CLASS 337

265 4,127,837
380 4,127,838
408 4,127,839

CLASS 338

4 4,127,840
128 4,127,841

CLASS 339

59 M 4,127,314
99 R 4,127,312
103 B 4,127,315
103 R 4,127,316
134 4,127,317
144 T 4,127,313

CLASS 340

3 D 4,127,842
21 4,127,843
71 4,127,844
151 4,127,845
171 PF 4,127,846
171 R 4,127,852
324 A 4,127,850
324 AD 4,127,849
4,127,851
324 M 4,127,848
336 4,127,853
530 4,127,847
640 4,127,854
687 4,127,855
4,127,856

CLASS 343

754 4,127,857

CLASS 346

136 4,127,858

CLASS 350

91 4,127,318
96.13 4,127,320
96.20 4,127,319
336 4,127,321

CLASS 353

31 4,127,322
61 4,127,323
116 4,127,324

CLASS 354

32 4,127,325
234 4,127,326

CLASS 355

15 4,127,327

CLASS 356

71 4,127,328
246 4,127,330
301 4,127,329

CLASS 357

13 4,127,859
15 4,127,860
4,127,861
30 4,127,862
38 4,127,863
44 4,127,864

CLASS 358

12 4,127,865
19 4,127,866
28 4,127,867
29 4,127,868
54 4,127,869
77 4,127,870
80 4,127,871
128 4,127,872
166 4,127,873
167 4,127,874
190 4,127,875
194 4,127,876
213 4,127,877

CLASS 360

51 4,127,878
4,127,879
68 4,127,880
70 4,127,881
98 4,127,882
105 4,127,883
119 4,127,884

CLASS 361

18 4,127,885
4,127,886
86 4,127,887
91 4,127,888
159 4,127,889
309 4,127,890
4,127,891

CLASS 362

32 4,127,892

CLASS 363

37 4,127,893
56 4,127,894
86 4,127,895

CLASS 364

200 4,127,896
900 4,127,897

CLASS 365

146 4,127,898
154 4,127,899
191 4,127,900
205 4,127,901

CLASS 366

83 4,127,331
131 4,127,332
4,127,333

CLASS 400

124 4,127,334
144.2 4,127,335
4,127,336
202.4 4,127,337

CLASS 401

8 4,127,338
132 4,127,339

CLASS 402

44 4,127,340

CLASS 403

113 4,127,341
243 4,127,342
245 4,127,353
279 4,127,354

285 4,127,343
374 4,127,344
388 4,127,345
402 4,127,347

CLASS 404

15 4,127,346
16 4,127,348
45 4,127,349
65 4,127,350
72 4,127,351
74 4,127,352

CLASS 405

51 4,126,998
171 4,127,006
4,127,007
202 4,127,003
4,127,004
227 4,127,005
239 4,127,002
258 4,126,999
261 4,127,000
4,127,001

CLASS 408

225 4,127,355

CLASS 415

2 4,127,356
116 4,127,357

CLASS 416

97 R 4,127,358
198 A 4,127,359

CLASS 417

5 4,127,360
48 4,127,361
53 4,127,362
269 4,127,363
373 4,127,364
420 4,127,365
494 4,127,366

CLASS 418

36 4,127,367
48 4,127,368
270 4,127,369

CLASS 422

5 4,127,383
109 4,127,384
158 4,127,387
201 4,127,389
258 4,127,388

CLASS 423

42 4,127,639
321 S 4,127,640
339 4,127,641
515 4,127,642
607 4,127,643
648 R 4,127,644

CLASS 424

44 4,127,645
45 4,127,646
78 4,127,647
86 4,127,648
177 4,127,649
184 4,127,650
195 4,127,651
200 4,127,652
4,127,653
216 4,127,654
246 4,127,655
248.5 4,127,572
4,127,656
248.54 4,127,657
248.57 4,127,658
249 4,127,660
250 4,127,661
265 4,127,576
266 4,127,662
270 4,127,663
273 R 4,127,664
4,127,665
274 4,127,666
275 4,127,667
279 4,127,668
283 4,127,669
300 4,127,670
311 4,127,671
4,127,672
322 4,127,673
324 4,127,674
330 4,127,675

CLASS 425

71 4,127,370
72 R 4,127,371
131.1 4,127,372
192 R 4,127,373
289 4,127,374
313 4,127,375
380 4,127,376
385 4,127,377
398 4,127,378

CLASS 426

2 4,127,676
5 4,127,677
250 4,127,678
565 4,127,679

CLASS 427

80 4,127,680
100 4,127,681
164 4,127,682
249 4,127,659
287 4,127,683
4,127,684
294 4,127,685
351 4,127,686

CLASS 428

35 4,127,687
36 4,127,688
38 4,127,689
40 4,127,690
116 4,127,691
137 4,127,692
163 4,127,693
245 4,127,694
371 4,127,695
373 4,127,696
4,127,698
412 4,127,697
461 4,127,699
558 4,127,700

CLASS 429

19 4,127,701
56 4,127,702
57 4,127,703
94 4,127,704
104 4,127,705
122 4,127,706
149 4,127,707
191 4,127,708
245 4,127,709

CLASS 431

4 4,127,379
15 4,127,380

CLASS 432

245 4,127,381

CLASS 521

98 4,127,547
112 4,127,515
137 4,127,516

CLASS 526

133 4,127,710
245 4,127,711
258 4,127,712

CLASS 528

93 4,127,514
94 4,127,562
199 4,127,561
273 4,127,560
283 4,127,565
4,127,566
391 4,127,713
413 4,127,513
481 4,127,564

CLASS 536

17 4,127,714
50 4,127,563

CLASS 542

404 4,127,715

CLASS 544

27 4,127,716
154 4,127,717
222 4,127,718
242 4,127,719
252 4,127,720
254 4,127,721

CLASS 546

17 4,127,579
90 4,127,574
97 4,127,577
103 4,127,573
114 4,127,580
205 4,127,578
250 4,127,581
302 4,127,582
340 4,127,583
345 4,127,575

CLASS 548

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